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An Address

ON

DEVELOPMENTS IN THE PUBLIC HEALTH FIELD*

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WHEN the International Council of Nurses did me the honour of inviting me to speak on Public Health Development at this Congress, before all things it became necessary for me to find an answer to the question: What unit of measure is at our disposal by which we can judge of the progress of this development? Every question is capable of more than one answer, which answers in themselves are often contradictory, according to the point of view from which we attack them.

The unit of measure which at first sight seems the most reliable is that of statistics. Nevertheless, statistics with their apparent precision, and on account of this same mathematical precision, are more likely than anything else to lead us to mistaken conclusions. To begin with, medical statistics are just beginning to assume a scientific form, and the figures furnished to us by different countries cannot always be compared one with another. For many illnesses we find only the figures relating to the death-rate. These figures are very far from giving even approximately the march of the diseases to which they relate. For example, I might cite tuberculosis.

Certain diseases which are essentially preventable, that is, susceptible of control by an efficient sanitary organization, are greatly influenced by other factors. For example,

typhoid fever assumes a varying intensity in a country in accordance with the different climatic conditions of the different parts of this same country. In the United States of America the southern states give a heavier death rate from typhoid fever than the northern. These rates are somewhat similar to those of Italy and Spain. The rates for Japan and those of the State of Sao Paulo, in the southern part of Brazil, are almost identical with those of the above mentioned countries. Factors† other than those of hygienic organization may influence public health, for example, economic and political conditions. The Great War has furnished a striking example of these influences, showing them to us as under a magnifying glass. In other cases, the progress of therapeutics may modify the epidemiology of some diseases to a considerable extent, independently of any hygienic or prophylactic measure. According to some writers this would appear to be the case in syphilis. The death rate from diphtheria, also, has been greatly influenced by the serum treatment.

Another factor has to be taken into account, namely, the changes undergone by different diseases in different epochs. This fact has been already emphasized by old medical writers and first of all by Sydenham, in his doctrine of "Epidemic Constitution." This is what the French writers call "la génie épidémique."

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† Société des nations. Rapport épidémiologique mensuel. No. 113. 15 avril, 1928.

For some illnesses one may admit the influence of therapeutics, as we have already seen may be the case for syphilis. For others one may advocate the difference in the condition of life, as in gout and chlorosis, which have rapidly decreased since the end of the last century. But for others we must admit a change in the nature of the illness itself. This seems to be the case for scarlet fever. A hundred years ago, this illness was a very mild one. Fifty years later it became very serious, and it has now resumed again its earlier character, while its incidence is practically the same.

But a much more important objection can be made to the consideration of medical statistics alone, in judging public health development: that is, up to now they may tell us to a certain extent what is the state of disease, but they tell us nothing about the state of health. A disease, I mean a disease which kills, and statistics deal chiefly with this, when it does not assume the sweeping waves of the great epidemics of the Middle Ages, is socially much less important than those indeterminate conditions which are not those of illness, neither are they those of health. At the most they allow us to form suppositions based on the prevalence of certain groups of diseases of a specially social character, like tuberculosis, syphilis, or alcoholism. Perhaps it is altogether wrong to seek for the explanation of improvement in diseases and death rate statistics, hygiene being the science of health, and by health I mean the harmonious development of mind and body.

The prevention of disease is therefore only a means to an end; one of the means. There exist an infinity of other factors, of moral, intellectual, æsthetic and economic characters, which work together in an equally important degree to this end, influencing no less than the prevention of disease the formation of the marvellous being whom we call Man. We shall therefore, leave to one side the statistics of disease, which, at the best, can only give us limited and one-sided information, and seek for the answer in the consideration of public health itself: how, with what weapons, with what mentality, with what aim, and by what means, hygiene seeks to attain the ideal conditions of which we have spoken. In other words, are its means and its mentality adequate?

Public health proceeds from medicine—the art of healing—and from sociology—the science which studies the relations between social conditions. One could almost say that public health, with medicine as its starting point, tends towards, or is pushed towards, sociology. Passing in review the history of public health, we note in it an alteration of medical and social influence.

In ancient times the social tendency prevailed; it is sufficient to call to mind the hygienic laws of the early peoples. We find that they often assumed a religious character, and those precepts which were more purely medical were strictly bound up with a social and political system, aiming towards the purity and robustness of the people, and restraining the decadence of social customs. The laws of Moses are typical from this point of view, and these remain even to our day, passing through the Christian era.

In the Middle Ages we may say that all ideas of hygiene were contained in ecclesiastical dicta: times of fasting, periodical restrictions in the use of certain foods, especially meat; the limitation of matrimony among relatives; the minimum age at which matrimony might take place. These, and but little more, were the medical impedimenta of the Middle Ages. Sickness was a manifestation of Divine law; a means by which God tried the faith and the virtue of believers, and chastised the wicked. It was a heroic experience by which saints attained to the glory of Paradise. And so the mysticism of this epoch manifested itself in the care of the sick and the poor. But this assistance limited itself to the necessities of the moment, ignored the past, and did not think of the morrow. It was the literal interpretation of the great precepts of the church, "Visit the sick," "Feed the hungry," for in centuries not very far back, hunger was one of the most formidable of diseases, and famine epidemics, if I may so call them, only too often preceded epidemics of plague.

From this mystical conception of the need of caring for the sick, hospitals took their origin, and this vast chain of institutions links the Middle Ages with our own times. The only exception to this poor public health program is shown by a few commercial and industrial communities; first of all the Italian Communes,

where we see the first attempt to establish an efficient public health system. We shall be obliged to return to this idea of the influence of commerce and of industry on the development of public health. In this, perhaps, we shall find an explanation and a justification for the progress in this field which we note in our own time, especially in industrial countries, and for the difference in public health conception in Anglo-Saxon (that is industrial) and Latin countries (which only now are beginning to emerge from rural economy).

But at the approach of the 19th century we find a complete change in the public health field. This is a great moment in the intellectual history of mankind. Free thought and free speech, the sentiments of moral and intellectual dignity which followed on the French and American Revolutions, manifest themselves in a decided reaction to metaphysics. The human spirit, suddenly freed from the trammels which had long imprisoned it, finds once more the fresh vigour, the audacity, the scientific curiosity of the early Greek philosophers before Socrates, but with the background of thirty centuries of experience. All at once the battles which past generations had given up as lost shine out as victories. Scientific thought, which in the seventeenth and eighteenth centuries was a privilege of few great spirits, now becomes a common possession. In less than a century scientific thought and its application is revolutionized. Our civilization is very young.

It is difficult for us to realize that Pasteur, the man who definitely destroyed the theory of spontaneous generation, and by means of bacteriology created a new science, unveiling the mysteries of infectious disease, only died thirty-four years ago. Many of us were already born, or even well on in life, when the centuries-old edifice of traditional medicine fell to the ground, and from the ruins of the ancient theories and dogmas arose the solid construction of experimental science. The history of science at this decisive turning point has the lightning flashes and the incisive language of the great historical dramas.

It was only in 1881, less than half a century ago, that the experiment on anthrax took place at Pouilly-le-Fort — Pouilly-le-Fort — name as memorable in history as that of the greatest

battle where the fate of nations was decided! Fifty sheep had been inoculated with a virulent anthrax culture; of these twenty-five had been previously vaccinated and twenty-five had not. On the 2nd of June, Pasteur, with Chamberland and du Roux, entered the farm, in the midst of a scoffing crowd, stirred up to animosity by fiercely adverse press agents, all gathered together to witness his defeat under the sceptical eyes of scientific officials. Twenty-five unvaccinated sheep lay on the ground, twenty-two already dead, the others dying, while the twenty-five vaccinated ones were on their feet, lusty and strong. The crowd of veterinaries, of farmers, of those who had come to see, moved to enthusiasm by an almost reverent admiration, applauded and applauded again. Rossignol, incredulous veterinary that he was, who had encouraged the experiment in order to demolish Pasteur's theories, stammered, conscience stricken, "Master, can you forgive my unbelief!" To find a parallel one must go back to gospel times, where through the action of miracles men were brought to a true faith. Never was the dominion of medicine greater and more unquestioned, not even in remote times, when, as a sacred mystery, healing took place in secluded recesses of the temples. It seems now as if a new religion has arisen on the horizon of humanity. The human body unveils its most intimate secrets; disease displays its inmost mysteries.

The great epidemics, which for centuries had invaded Europe, annihilating the population, irresistible in their fearful progress as the barbarian hordes that submerged Roman civilization, are quelled for ever. Infectious diseases like typhoid, having displayed their cause, are attacked at their origin; others like diphtheria are victoriously conquered when they have already invaded the body. The tiny organisms that for centuries had so fiercely attacked mankind are at last discovered; they are reduced to slavery, and become docile instruments of healing and prevention of those diseases of which before they were the cause. One further step, and man is made immune to infection, as the gods of Homer made their heroes invulnerable. And now for a moment Man thinks himself Lord of Life and Death. The crucible of a laboratory seems to contain the destiny of man.

The famous "boutade" dates from this time; virtue and vice are the result of a chemical reaction, like sulphuric acid. This exuberant scientific youth pervades all intellectual and artistic manifestations. In philosophy we have positivism; in art—realism.

Public health, too, is entirely dominated by the new scientific discoveries, and man is considered mainly as a possible receptacle of infectious disease. The public health officer now felt himself a little god, able to control from his laboratory the march of deadly disease. He admired with a rational admiration the French Revolution that by political liberty had made possible so much progress in the field of science; but he ignored the great moral revolution which without noise and without victims had been accomplished in England in the last years of the 18th and the first years of the 19th century.

We don't realize how young—how very young—is our civilization, *what we call our civilization*. Self-respect, justice, sympathy with our fellow creatures, feelings of responsibility and of co-operation for the well-being of the masses. It is a new concept in the history of humanity.

Three great factors work together to bring forward these new ideals.

1. In the spiritual world, the cool correctness of Classicism gives way to Romanticism; the joy and the sorrow of the human being, his sufferings and his enthusiasm invade literature and art.

2. The religious revival which was the inspiration of an effort to remedy the guilt, the ignorance, the physical suffering, the social degradation of the profligate and the poor. (Sir Malcolm Morris).

3. Industrialism. From the hygienic point of view one of the most striking effects of industrialism has been the alteration brought into the family unit. In rural countries the family is still the little world that it has been for all time, where under the same roof we find the man who provided for the nourishment, and assures the protection—workman, hunter, soldier, while the woman sees to all the homecraft and by a long tradition of inheritance is a born nurse, cook, and child educator.

In industrial countries, instead, women become wage earners as well as man, which leaves a gap to be filled and the necessity for well organized social work—well organized, because industrial-

ism means efficiency in men and in methods; it means to get the best results with the minimum of effort; it means to get to the root of things. Sarah Gamp was not human, her morality was perhaps not very high, and, above all, she was not efficient. She was an economic mistake, before being a moral nuisance.

In the *Diary of Florence Nightingale* there are a few very striking lines. On relating a visit to the historian Sismondi in Geneva she says: "All Sismondi's political economy seems to be founded on the overflowing kindness of his heart. He gives to old beggars from principle, to young from habit." We feel quite well she does not approve of this overflowing of the heart over political economy.

Another factor we owe to industrialism is the art of persuasion and advertising, and that is why we find such a difference between the public health organizations in industrial and agricultural countries; in the one, the law and the policeman; in the other, the seeking of the spontaneous collaboration of the public through specialized agents (Public Health Nurses). This may explain some difference in the results attained. For instance the diminution of tuberculosis, a typical social disease, is greatest in industrial countries like the United States of America where there is a highly developed Public Health Nurses' organization. On the other hand we find that infectious diseases of a more strictly medical character are efficaciously checked wherever there is sufficient medical preparation and official state control. Take for instance diphtheria. The difference in mortality from this disease in Europe seems to be due to the promptitude with which serum is administered. In Italy it is highest in the mountain provinces in the centre of the country. Since 1921 there has been in Italy but a single case of death from smallpox, and the illness itself is very rare. In the first four months of this year there have been but two cases and these were imported from outside. Puerperal fever, an eminently medical disease, gives us a minimum of mortality—9 deaths in 10,000 women in childbirth. Sweden alone in all Europe shows lower figures (in the three years 1911-1913).

Let us go back to tuberculosis. In Italy the mortality from this illness has not greatly changed in the last fifty years, and what im-

provement is noted is chiefly in cases of a non-pulmonary type, which, as we know, are more easily controlled by curative treatment; while the mortality from malaria has dropped in the same period from 59.5 to 6.7 per cent. From a social point of view, malaria stands between tuberculosis and diphtheria. The campaign against this illness needs a good deal of collaboration on the part of the public; but the evidence of the infection is of much easier demonstration than in tuberculosis, and therapeutic measures much more efficacious, and, for this reason, much more easily understood. Therefore, I think we are justified in saying that the Anglo-Saxon public health system will show itself at its best in all the illnesses where medical power is weakest and the social conditions and public mentality more important.

There is only one danger, that is, if in their zeal for the good of humanity the public health workers do not overdo it. That means going back to the rural public health system of coercion and imposition. In some ways the public health movement seems to have got to a crucial point, which reminds us of the situation of religion in the Middle Ages when believers thought themselves justified in imposing their creed by fire and sword. No ideal, however great and however generous in its conception, can dispense with the conscientious and willing collaboration of the public. A striking testimony of this comes to us from Germany, where the insurance system is the oldest and the most complete. In a recent book, by Dr. E. Liek,¹ lately translated into French, we read:—

En voulant couvrir les différents risques, maladies, accidents, invalidité, chomages, les Assurances sociales ont causé la démoralisation de la nation allemande, enlevé le goût du travail à la classe ouvrière, créé un système d'exploitation avérée ou dissimulée de la maladie, poussé un grand nombre d'ouvriers à faire d'interminables procès pour obtenir indemnités ou rentes, déterminé enfin la prolifération et la dévalorisation de la profession médicale.

Possibly there is exaggeration in this statement, but, even by making due allowance for this, we can always take it as a warning against the danger of accelerating progress by law. The great feature of public health will always be the human character, and the history of nations shows plainly that human character does not progress in proportion to intelligence,

and moral conquests are always behind intellectual ones.

Another warning comes to us from England. E. D. Simon, in a recent study on the subject "How to abolish the slums," pointed out the deteriorating effect of the "slum mind," in many of the dwellers in houses which were in themselves structurally decent. His own figures indicate that this may be a debasing factor in the order of from 12 to 25 per cent, even in a good housing scheme. If these figures are correct, they demonstrate that from 12 to 25 per cent of one of the most civilized populations show alarming antisocial characteristics. Figures like these are more likely to give us an adequate idea of what has to be done, than statistics of illness and death rates, because they inform us of the moral and material condition of the living man, and show us the weakest point of our front, that is, education, moral as well as physical.

And education must be started with the child. Unluckily our experience with children is too recent. Only in these last years reports from medical school inspectors have begun to give us a fair idea of the real condition of our children. It is quite safe to say that one-third of the school-children need medical attention; and of course, we do not take into consideration those who do not enter school because their health is too seriously impaired. They are not small ailments which we find recorded. Certainly we do not find sensational words like diphtheria or scarlet fever; very seldom do we find even tuberculosis. The diseases or complaints which we find may sound unimportant, quite petty, to the general public; general debility, belated rickets, catarrhal or neuropathic tendencies, diseases of the ear, nose or throat, adenoids, decay of temporary teeth, etc. These which are the most common defects of school children (and all children of our day are school children) are of a constitutional character, which means they stand for a degenerative process. They are the signs of a deeper constitutional unfitness, sometimes, hereditary, but more often due to something lacking in their bringing up.

So these are not defects which can be put right once for all, but they give just cause for grave anxiety for the future. In countries such as England, where these records cover

some years, a slight improvement is noticeable, but it is *so slight* and *so slow*! The problem is most complicated and difficult to deal with. It is easy to start a campaign, say, for certain vaccinations. We can oppose the terror of death to a harmless inoculation that can be performed in a few seconds and that is the end of it. By the emotional feelings stirred by a well conducted public health campaign, we may hope to check some one or other disease, but this will neither give us the conquest of health, nor allow health to be permanently maintained. As George Newman warns us, in one of his most memorable reports²:

Health is not an artificial accomplishment, quickly acquired and easily maintained. It is a development of body and mind; a growth slow in process; a habit, broad-based upon heredity and nurture; a balance of moderation in all things, a harmony of a sound mind in a sound body, good nutrition combined with steady nervous regulation.

Slum minds, alcoholic minds, careless minds, these are the pitfalls in our way which prevent us from going on. We can trace the origin of all of them in childhood; they grow as life goes on, and throw their shadows over the coming

generations. We have advanced far, very far, from the ingenuous ideals of some fifty years ago when public health consisted almost exclusively in fighting contagious disease, and in securing healthy environment. Now that this dream is almost realized, in many countries at least, we perceive that what remains for us to do is to improve man himself.

And that is why, when you asked me to speak on the developments in the public health field, I thought I could not point out a higher aim or the way to a more efficient conquest than the right education of the new generation, the making of the citizen, considering that all satisfactory development in the public health field depends upon the comprehension of the following principle:

The economic value of a population is in direct ratio to its intellectual, moral, and physical well-being.

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An Address

ON

EGYPT AND MEDICINE: RETROSPECTIVE AND PROSPECTIVE*

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[In introducing his subject Sir Robert dwelt on the mystery and fascination of Egypt, his delight in his visit; and the success of the centenary celebration of the Faculty of Medicine and the International Congress, held last winter. He proceeded:—]

I MUST not dwell on personal questions, but rather seize the occasion to ask your consideration along with me of some of the relationships of Egypt and Medicine. For convenience you will let me group the points under two heads: (1) retrospective, (2) prospective. The centenary of the Faculty of Medicine forms a central point from which one naturally glances, first backward, and then forward. From one point of view the celebration was commemora-

tive, from another, anticipatory. The medical position in Egypt is at present significant. The Government seems alive to the needs and possibilities of modern medicine. The present School of Cairo has emerged from a succession of vicissitudes and is to-day a vigorous element in medical education and scientific research. From the moment I crossed the threshold I was conscious of an atmosphere of life and activity.

The celebration of the hundredth anniversary of its foundation is an event of importance to any institution. For the Faculty of Medicine of Cairo it registers at a point in time the impress of solidarity and modernity which have been rendered possible by changes which the hospital and school have witnessed. The first

* Delivered before the Egyptian Society of Edinburgh University on May 10, 1929.

division of our retrospect concerns, therefore, the hundred years which have elapsed since the first lesson in anatomy was given in 1827.

Prior to the French invasion of Egypt, at the beginning of last century, what now constitutes the Kasr-el-Aini Hospital had been a palace and a celebrated centre of hospitality for distinguished visitors. After the French invasion it was transformed into a military hospital and, in 1825, Clot Bey came from France as Surgeon-General to the Egyptian Army. Clot Bey was a man of vision and no less of action. He proceeded to the development of the hospital and the establishment of a medical school. By the year 1837 the hospital and school occupied the present site of Kasr-el-Aini. The course in medicine occupied five years; the students numbered 300, and were lodged and maintained by the Government.

Time does not permit me to dwell on successive chapters in the story of the school during one hundred years. The forward movement was far from continuous. There were many ups and downs. Re-arrangement and reconstitution of the staff were frequent. The leading nations of Europe contributed members from time to time. After Clot Bey, the founder, may properly be cited Griesinger, Bilharz, Vambery, Sandwith, Osman Pasha Ghalib, Keatinge, Ruffer and Wilson.

Since the great War there has been a remarkable renaissance. The school and hospital councils have been reconstituted and the teaching staff revised. Egyptian graduates have been freely appointed to the school and hospital staff. At present the list of teachers includes names of which any school might be proud. The curriculum is similar in course and extent to that in the leading schools of Europe and America. All this has been chiefly due to the direction and increasing efforts of the late genial Dean of the Medical Faculty, Dr. F. C. Madden, who was the life and soul of the centenary celebration, and whose premature death at Cairo a fortnight ago we all deplore. Such is the stage which the Egyptian School of Medicine has reached with its headquarters at Cairo. Satisfactory and encouraging so far as it goes. Not a terminal stage, however, but rather the starting point of further evolution on modern lines, if in the world-wide community of medicine

Egypt is to play her part aright as a centre for training and research.

How Egypt proposes to take her place was symbolized by the impressive ceremony when, on December 16, 1928, in presence of representatives from most of the scientific institutions of the world, the reigning sovereign, H. M. King Fuad the First, laid the foundation stone of the new buildings of the Faculty of Medicine and Hospital on Roda Island. Washed on all sides by the ceaseless flow of the Sacred River, which shields from the noise and bustle of the crowded city close at hand, what an ideal site for the modern temple dedicated to the prevention and treatment of disease!

Will you now accompany me in a far flight backwards in the history of your country? Our first stopping point will be some 2,200 years ago. About that date the city of Alexandria, prosperous in high degree, had become the patron of philosophy, science, and art. Alexandrian learning influenced the world. The practice of medicine was placed on a scientific basis by the anatomical school of Alexandria, where it is interesting to recall, the systematic dissection of the human body was for the first time undertaken as the basis of the healing art. Some of you are doubtless familiar with the names of Herophilus and Erasistratus who were chiefly responsible for the fundamental advance. It may not be known to you that such a familiar term as "*duodenum*" was used for the first time in the teaching at Alexandria. Without attempting to assess the part actually played by Egypt itself, or how much of the brilliant achievement was due to Grecian tutelage, it is important to underline the fact that in those days, and for a long time thereafter, Alexandrian medicine illuminated the world.

A further long flight backwards takes us over a wide stretch of country and into periods when facts are less clear and the evidence rests on oral tradition and the sometimes doubtful interpretation of hieroglyphic legend.

Throughout the dimness of those 2,700 years (if we go back to 3000 B.C.) the history of Egypt, as gradually unrolled from the monuments of the past, reveals many names of far-reaching human interest. For our present purpose I would bid you focus vision on the island of Philæ—that wonderful spot which is every year alternately bathed in the warm rays of

the Sun God and washed by the slaking waters of the Nile. The island of Philæ holds numerous relics of the past and bears traces of successive generations. I ask your attention particularly to a mural relief from the island which one authority records as having existed in the great temple of Isis, and which another thinks probably belonged to an adjoining temple dedicated to Imhotep, whose features are represented on the relief. What is traceable by way of inscription seems of Ptolemaic period and refers to "Imhotep the Great, son of Ptah, dwelling in Philæ, the great (healer?) of all pain when one calleth to him in any place." If the date of this inscription be rightly ascribed to the Ptolemaic period, it is, of course, a relatively late reference to Imhotep. I have cited it because of its local connection with the island of Philæ. Glancing back in time from the Ptolemaic period, we find many traces bearing on the life and influence of Imhotep up to the time of the Third Dynasty. It may therefore be convenient if we pass to that date and try to knit together the facts regarding this remarkable personality, whose relations to medicine are of unique sort.

Imhotep first appears in relation to Pharaoh Zoser somewhere about 3000 years B.C. He seems to have been born at Memphis and to have come of cultured stock. He became a conspicuous figure in the household of the reigning monarch, in a word, Vizier to the King. He is described as "Chief of all works of the King," "Supervisor of everything in the entire land," and "Supervisor of that which Heaven brings, the Earth creates, and the Nile brings." Reputed to have been the son of an architect, he seems to have continued his father's devotion to the art, and has been credited with having designed the Step-Pyramid of Sakkarah, close to Memphis, presumably as the tomb of the monarch. He is enrolled as one of the great sages of ancient Egypt, his name being associated with that of Hardedef, the designer of the Great Pyramid of Gizeh.

We are specially concerned with his relation to medicine. If, as the available evidence would indicate, he was a notable magician, this in no way detracts from the high position he occupies in relation to medicine. In those days magic was expected from the physician. Im-

hotep's fame as a physician began in court circles during the Third Dynasty, and gradually increased for at least 2,500 years.

From the immediate, personal regard in which Imhotep was presumably held as court physician and vizier, and the large part he played in the public life of the land under Pharaoh Zoser, there was gradually evolved a sentiment of veneration for his memory. In this way he came to be reckoned a demi-god to whom worship was rendered, probably first at his tomb, and then more widely throughout the country. The spread of this worship is evidenced abundantly by the number of figurines, or statuettes, which have been discovered in different parts of Egypt. Some of these are of the finest workmanship, dating approximately from 600 B.C., or thereabouts. Such statuettes are to be found in the great Cairo Museum and scattered through a good many other museums in different places. They represent Imhotep in human form as a demi-god, and are in marked contrast to those of a later date in which he figures as a full deity.

Throughout approximately 2,500 years the fame and influence of Imhotep gradually extended, and temples of healing were founded in association with his name. Some of you are familiar with the Museum at Cairo and may recall the sepulchral stele of Shemkhetnankh. Shemkhetnankh, that is, "He who possesses the things that give life," was a distinguished physician during the reign of King Sahu-ra of the Fifth Dynasty. The legend on the stele shows that he was the chief physician to the Royal Hospital. This fact affords the best evidence of the high position held by medicine in Egypt 5,000 years ago when civilization was conspicuously in the ascendant. The procedure followed in the preservation of human remains—the preparation of the mummy—similarly testifies to the knowledge of anatomy and the essential principles of antiseptis.

Time forbids me quoting further examples illustrative of the point, and I hasten to the terminal phase in the history of Imhotep. Following his repute as a physician and man of science, and his consequent elevation to the position of demigod in the minds of his fellow countrymen, comes the supreme fact of his inclusion among the tutelary deities of Egypt. The date of his apotheosis may be placed about

525 B.C. when there occurred a noteworthy renaissance of learning, science, and art.

From all the records one fact, at least, emerges with clearness, namely, the remarkable personality of Imhotep; wise, omniscient, powerful, beneficent, the fount of medicine and of magic, a prince of psycho-therapy. Imhotep, the human son of Kanof, transmuted into the offspring of the immortal Ptah, became the earliest God of Medicine of whom the world has record. By the time that Egypt was conquered and overrun by the Greeks, about 300 B.C., the worship of Imhotep must have been pretty general throughout the land.

When the mergence of ancient Egyptian medicine with more recent Greek teaching occurred in the development of the Alexandrian School, it is probable that a similar mergence occurred in relation to the Egyptian and Greek deities of medicine. To Imhotep was indeed transferred by some authorities the name of Asklepios (*Æsculapius*) and, in time, the names were used indifferently. Ceremonies previously associated with the name of Imhotep were described in connection with the name of *Æsculapius*. Thus, one writer (*Ammianus Marcellinus*) in referring to the worship of the sacred bull called *Apis*, says that when the bull died "another is sought amid great public mourning; and if one can be found distinguished by all the required marks, he is led to Memphis, a city of great renown and especially celebrated for the patronage of the god *Æsculapius*. And after he has been led into the city by one hundred priests and conducted into a chamber, he is looked upon as consecrated and is said to point out by evident means the signs of future events."

The inclusion of Imhotep among the tutelary gods of Egypt led to the building of temples dedicated to his honour and worship. Remains of such temples are scattered numerously throughout the land. Naturally, the chief centre of his worship was at Memphis, in relation to his tomb. The temple at Memphis became a pilgrim centre for ill and well persons alike. It finally developed into a hospital and teaching school of medicine which, it is interesting to note, was presently baptised by the Greeks with the name *Asklepieion*. The *Asklepieion* was adjacent to the *Serapieion* dedicated to the worship of *Serapis*. Other temples were similarly developed into schools of medicine, as at Thebes.

On (*Heliopolis*), and *Sais*, the high priest of the last named temple bearing the title "greatest of the physicians."

Those centres sacred to Imhotep were naturally visited by sick persons and the friends of the sick, to whom messages of hope and relief were conveyed in dreams during incubation, that is, while the seeker of help slept in the temple. The methods of incubation got widely disseminated throughout the ancient world. Regular festivals were arranged in honour of Imhotep, when offerings on a magnificent scale were received from the devoted.

Perhaps of greater significance was the development of the temples as seats of learning and repositories of holy books. Time may yet unearth important treasures in this connection. Meanwhile, we possess several medical papyri of great interest, dating as far back as the 14th century B.C. The *Ebers papyrus* is encyclopædic in range of subjects.

Thus the worship of Imhotep, which after the Greek occupation became merged with that of *Asklepios*, constituted an important and picturesque feature of primitive Egyptian life. Like other features of that life, it gradually waxed in importance and then waned. Its decline is notably traceable during and subsequent to the Roman occupation of Egypt.

The point I am anxious to press is that the current view which attributes the beginnings of medicine to ancient Greece and traces its inspiration to *Aesculapius* and the Temple of *Epidaurus* is historically incomplete. The sequence of events in the relations between Greece and Egypt suggests that whatever was brought by the Greeks to Egypt, and whatever medical knowledge was disseminated by them from Alexandria in the height of its fame, the science and art of medicine were influenced fundamentally by the continuous current of Egyptian lore which had flowed for more than 2,500 years. In recalling what medicine owes to Greece, and rendering homage to *Asklepios* and the *Asklepieions*, we do but justice to the older civilization when we express supreme reverence for Imhotep—for him who came in peace 3,000 years before Christ. It is not without significance that the genial and accomplished *Apuleius*, in the beginning of the Christian era, makes *Hermes* address *Asklepios* in these words: "Thine ancestor, the first dis-

coverer of medicine, hath a temple consecrated to him in the Lybian mountains, near the Nile, where his body lies, while his better part, the spiritual essence, hath returned to the heavens whence it still by his divine power helps feeble men as he formerly on earth succoured them by his cult as a physician."

And now let us retrace the long flight over 5,000 years and drop down once more on Roda Island at the moment when King Fuad the First, representative to-day of the Pharaohs of a far-off yesterday, places the first stone of the new medical buildings and hospital within sight of the Pyramids and within earshot of the Great Sphinx.

The scene was worthy of a great artist's brush. The successor of the Pharaohs, trowel in hand, supported by his Ministers in the pomp and majesty of the Court, and surrounded by delegates from almost every country under the sun, placed the first stone in this modern temple to Imhotep on the banks of the Nile. The present-day has a lust for novelty. The scene was one to have been "televised" by the press of the world for the benefit of all its curious readers. Something novel it might seem. Yet, from another point of view, it was but staging the prologue to the story of the renaissance of medical lore and learning which is dawning over the banks of the Nile. One was inevitably led to such a line of thought in perusing the honourable roll of the staff of the Faculty of Medicine and the Kasr-el-Aini Hospital, and in passing through the laboratories and wards, and in getting to know the personal qualities and capabilities of those in charge.

The plagues of Egypt figured in classic times and, in one or other sense, have come down to the present. The occurrence of some of these had indeed afforded the occasion for research work with which the school at Cairo will always be honourably associated. The names of Bilharz and of Griesinger hold a high place in the records of medicine. The observations of investigators working in Egyptian laboratories have contributed not a little to the common stock of knowledge.

For Egypt itself the issues are immediate and urgent. Apart from the large cities, there seems ample evidence for the statement that an overwhelming majority of Egyptians suffer from one or other of the present-day plagues.

Bilharzia, of whose continuous presence there is evidence for more than 3,000 years, is still with Egypt—very much with Egypt. A high authority states that "it is no exaggeration to say that 75 per cent of the Egyptian nation suffer from bilharzia." And the records of the Kasr-el-Aini Hospital show that 8 per cent of the total deaths in hospital are directly due to that disease, either in its chronic or more acute manifestation. Similarly, ophthalmia and ankylostomiasis have probably come down through the centuries, crippling or killing wherever they occurred. It has been reckoned that ankylostomiasis and bilharzia account directly for one-third of the deaths in the whole of Egypt. Pellagra likewise spreads its tares freely throughout the population. Apart from milder effects, pellagra "fills the two asylums of Egypt." And a number of other diseases might be added to this rapid review.

In addition to the constant toll paid to these death-bringing agents, as shown in the annual mortality records, an even more serious count is the amount of deterioration, physical and mental, which these infections spread in their train everywhere throughout Egypt. A nation whose sons are thus smitten and crushed and lamed must suffer badly in respect of the development of its resources.

Among the numerous problems with which Egyptian statesmanship is faced to-day none is of greater importance than that of the recovery of the national health through the scientific exclusion of those endemic diseases which enfeeble the nerve and sinews of the great working population. The scope of preventive medicine throughout the world is immensely wide, and some of the problems are obscure. The program of preventive medicine for Egypt is concrete, definite and urgent. The scientific facts which form the foundation for advance are clear, and the guiding lines are evident. As in other warfare, we must adapt our methods to the particular needs of the moment. I am convinced that in the training of the medical profession for service in Egypt at the present time there should be a completer equipment from the side of preventive medicine, and towards the attainment of this the energies of the new school and hospital must certainly be directed. Beyond determined focussing of effort on the part of the medical profession, the idea has persistently been forced

on me, in wandering up and down from Alexandria to Wadi Halfah, that such effort, however vigorous, can hope for full success only if it is closely linked with the universal spread of knowledge and good-will throughout the great mass of the fellaheen. Having regard to the magnitude of the issue, it seems unlikely that salvation will be found through the ordinary educational channels or governmental propaganda. Egypt is face to face with one of those occasions when the one hopeful line of national recovery seems to lie in an appeal to the conscience and moral sense of the people. It is one of those occasions when *the forces of traditional learning and religious fervour should be captured in the vital interests of the people.*

In all reverence be it said, the Koran is understood to contain an answer to every question. Why not seek the solution of the present problem through the Koran? The text of the sacred book has had many commentators throughout the ages. Likewise the will of the Prophet has been expressed by comment and tradition which have had the authority of the written word. While some traditions tend to fall out because of the altered conditions of life, the significance of others becomes more essential than before. *The vitality of a religion depends much on its applicability to the conditions of life at the time.*

A religion which makes such a point of purification of the body can surely be shown to include preservation of the body from the contamination of agents which are associated with physical disintegration and death. If the religious commentator and the high priest would combine in an endeavour to wring from the

sacred wisdom of the Koran an answer to the practical question before Egypt to-day, and the religious influence were passed from the priesthood downwards through all ranks of the people, the physical redemption of Egypt would be begun.

In putting it thus, I hope that I shall not offend anyone. Let us remember that, while Imhotep, as Pharaoh's physician and vizier, had a wide sphere of influence among the mighty and learned of his time it was only when, later, he was included within the ranks of the tutelary deities of Egypt and was worshipped by the nation as a whole that he wielded the supreme influence over the lives and health of the people:

"Great One, Son of Ptah, the creative god, made by Thenen, begotten by him and beloved by him, the god of divine form in the temples, who giveth life to all men, the mighty one of wonders, the maker of all times (?), who cometh unto him that calleth upon him, wheresoever he may be, who giveth sons to the childless. . . Great Imhotep, Son of Ptah, who fliest up to heaven like a sparrow-hawk, who goest as a worthy soul, who comest as a divine falcon in the company of the restless stars. . . The serpent. . . illuminates thee and opens the doors as thou passest through the hall (? of the Duat); Osiris rejoices as thou enterest him." Millions and hundreds of thousands call on him."

These things are parable. In these modern days Egypt must seek once more to harness science and religion as twin influences on human life. In the social sphere, particularly so far as health is concerned, religion may be made to wield dynamic no less than static influence. Sons of Egypt, you have the ancestry, you have the inspiration, and you have the potential. Your country calls for your consecrated service.

A CASE OF SEVERE SNAKE-BITE IN THE WEST OF ENGLAND.—A woman was lately walking down some cliffs near Plymouth when she was bitten by a snake on the dorsal aspect of her foot. She immediately had it sucked and a tight handkerchief was put around her ankle. In five minutes, however, a large swelling had developed and she could barely struggle down to a boat to be conveyed back to Plymouth. In a quarter of an hour from being bitten the foot and ankle were very much swollen and she experienced a "tight" feeling across the chest and difficulty in respiration. Her lips swelled up, she began to vomit, and in half an hour she was completely collapsed with a choking feeling in the throat, due to some oedema of the glottis. She was practically pulseless, cold, and sweating; she had incessant vomiting and diarrhoea; her face and lips were swollen enormously and the whole leg was enlarged with

a slight vesicular eruption becoming visible. She was given injections of adrenalin (which relieved the throat condition), strychnine, and pituitrin and large quantities of brandy to drink, and was moved to a nursing-home, where the wound was incised and a clot turned out. It was then evident that the wound had directly involved a small vein. Potassium permanganate was rubbed in locally and stimulant injections were continued until her pulse gradually returned six hours later. Within the next two days she rapidly improved; her pulse became normal and no rise in temperature was charted. The leg, however, continued to swell with pitting oedema, and femoral thrombosis was suspected. After four days the swelling suddenly gave way to blotchy discoloration, obviously due to extravasation of blood into the tissues. After this recovery was uneventful.—D. W. B. in *The Lancet* 217: 744, Oct. 5, 1929.

CONTROVERSIAL POINTS IN OBSTETRICAL AND GYNÆCOLOGICAL PRACTICE*

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OF late much has been written upon the value of prenatal care. Hence it seems fitting to discuss with you what has been accomplished by routine antenatal attention to the pregnant woman, and where this has failed. There is no doubt that by proper prenatal supervision, hygienic and dietetic suggestions, there has been a great improvement in our methods and results in treating the toxæmias. Fewer cases of hyperemesis are being terminated, and fewer of the toxæmias of the later months reach the convulsive stage; consequently more women are saved. Likewise, the routine employment of the Wassermann reaction, and the institution of antiluetic treatment in cases of ante-natal syphilis have markedly diminished the incidence of stillbirths and have improved infant mortality. Routine pelvimetry has given us a better knowledge of pelvic contraction and forewarns us against one of the principal causes of dystocia. The early recognition of ante-partum hæmorrhage has resulted in sending many women into hospital before they have become infected and exsanguinated, and thus has improved the results in placenta prævia. But what is the value of giving a woman the advantage of exhaustive pre-natal study unless the conduct of her labour is properly supervised and aseptically managed by men having special obstetric training, for puerperal morbidity and mortality have not been lowered by all this ante-partum study. Therefore, it must be admitted that there is something more than pre-natal care needed in the conduct of a maternity case. As we see it, every prospective puerpera is entitled: (1) to intelligent ante-partum care; (2) to skilful and scientific management of her labour; (3) to conscientious attention to post-natal hygiene and follow-up. And not until these three requisites are carried out, will our obstetric results be more creditable. Take, for instance, the management of labour in

a case of contracted pelvis. In many quarters surgical delivery has replaced the obstetric art, with the result that great numbers of Cæsarean sections are being done because the woman has a slight contraction of her pelvic diameters, and this is the easiest way to get the baby out.

CÆSAREAN SECTION

At the recent Congress of British Obstetricians in Dublin the entire first day was devoted to a symposium on this important subject. Professor J. Monroe-Kerr opened the discussion with a consideration of the old teachings of the Edinburgh School, which advocated delivery by axis-traction forceps, and compared the results with those of the Glasgow School, with its advocacy of Cæsarean section, and showed that neither plan solved the proposition. Each case of disproportion is an individual problem and at the present time there is but one outstanding fact, *i.e.*, *that the fetal head will always be and is the best pelvimeter*, but it is not put there to be crushed as it comes through. It is impossible to estimate by accurate measurements the actual size of the pelvis and the relative size of the fetal head. While we admit that with the x-ray the pelvis can be accurately, and the fetal head approximately, measured, yet the unknown factors of malleability, moulding, and the force of the uterine contractions can never be determined except by the test of labour. Furthermore, the contour of the brim, the obliquity of the inlet, as well as parietal obliquity, add other factors of doubt. Hence, in this large class of borderline contractions which produce the majority of our dystocias, there is, in the last analysis, no accurate method of estimating the relation of the particular head to the particular pelvis on the actual date of delivery. This uncertainty can only be settled by the test of labour and this is especially true in the primipara.

In my country, and I believe it is so in

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Canada, we do not meet with many absolute contractions. Most of the pelvis which give trouble are the generally contracted, the rachitic flat, or the high assimilation, with its false promontory and exaggerated inclination at the brim. In this class of pelvis a very large proportion of the labours, varying from 60 to 80 per cent, terminate spontaneously, yet, the surgeon unschooled in the obstetric art needlessly consigns many of these women to operation. Because of its technical simplicity Cæsarean section has come in for wider and wider application and leaves in its trail an ever increasing mortality. Take, for instance, the statistics of Holland and James Young, in England; and of Gordon, Beck and myself in America, who have made exhaustive analysis of the subject. From these studies we find that in perfectly clean cases, operated on before the onset of labour, the mortality averages 2 per cent, while after the membranes have ruptured it ranges from 6 to 14 per cent, and after instrumental interference has failed reaches the formidable figure of 27 per cent. There is no other clean abdominal procedure in pelvic surgery which carries with it such a mortality, and it must be remembered that these statistics are not gathered indiscriminately, but are taken from large hospital services in England and America. Therefore, how can we with conscience advise section as freely as it is being advised now? But, you naturally ask, what is there to do except a high forceps intervention or section? How can we handle these cases of relative contraction?

Each case is a problem in itself, for so many mechanical factors enter into the result that no hard and fast rules can be laid down, except one, that every patient with a contracted pelvis must be handled with surgical cleanliness and be considered as a potential subject for operation. In our clinic each patient with a contracted pelvis is checked at weekly intervals during the last six weeks of pregnancy by Muellerization of the head, and at the same time we ascertain the fetal posture and the general condition of the soft parts. This allows, if necessary, the induction of premature labour. In the past few years this time-worn procedure has been relegated to history, but it has a place, limited as it may be, which is proved by the following records.

Fletcher Shaw, in a study of 242 cases of contracted pelvis, all having ante-partal supervision, induced labour with the Krausse bougie at the 34th and 36th weeks, with no maternal deaths, and a record of but 14 stillbirths. Barris, in 134 cases of the small, round type of pelvis, induced labour at the 34th and 36th weeks, with no maternal deaths and a fetal mortality of 16. It is apparent that in this country, the art of obstetrics is fast passing into history, and has been supplanted by surgical intervention which needs to be curbed.

Another cause of our high fetal and maternal mortality is the popularity which has been given to painless labour by shortening the second stage by elective version. One of the enthusiastic advocates of this procedure reports in four successive years more than 900 versions in about 1,100 annual deliveries. This, at first sight, rather staggers one, and when we look into the primary fetal and the infant death rate during the first week of life we are more startled by noting that it is just four times the infant mortality throughout the remainder of the state in which this fearless operator practices.

Is it justifiable as good obstetric practice to displace an already engaged head which is making normal progress through the pelvis in order to relieve the woman of one or two hours of pain in the second stage, when the cost is increased fetal and infant death rate? Even in the hands of the expert this is not sound teaching.

THE MISUSE OF THE FORCEPS

Routine use of prophylactic forceps is another menace to rational midwifery. If the forceps was used to control and guide the advance of the head through the outlet the balance would probably be in its favour, but unfortunately it offers a speedy means of delivery through imperfectly prepared soft parts, often with devastating results. Do not let it be understood that I do not appreciate the life saving value of the forceps, but I do take exception to its routine use, except for control on the pelvic floor. When a woman falls into labour it is our duty to carry her through her first stage in such a manner as to conserve her strength, avoid infection and trauma, and secure full dilatation of the cervix. The first

stage of labour takes time and pain; the physician must give the time; the patient has the pain.

The impression that dilatation and paralyzation of the cervix can be accomplished by artificial means is erroneous, for when dilatation is completed by the band, bag, instrument, or drug, there is but one result, namely, laceration. Compare the cervix in which the membranes have been preserved with the cervix dilated by a head, unprotected by the bag of waters, or hurried by manual dilation or the employment of oxytocics, and one cannot but be impressed with the depth and extent of the lacerations found in the latter case. It is after the head has passed through the cervix and lies in the vagina that the forceps has its widest use, just as it is at this stage that the watchful obstetrician follows the fetal heart with painstaking care. We teach that the most important stage of labour is the second or perineal stage, for, unless the cord is prolapsed, the time consumed in the passage of the head through the vagina and vulvar orifice puts the greatest stress upon the child and has the greatest effect on the pelvic tissues. A too precipitate labour, or a too prolonged second stage, has a similar effect on the child, namely, intracranial damage. What is actually happening to the child as the result of each contraction can be accurately determined by auscultation of the fetal heart during and after each pain. If everything is normal the fetal heart rate, which is always slowed during a contraction, rapidly returns to its former rate. On the other hand, if the child is suffering, or if there is funic obstruction from coils or pressure, the fetal heart fails to regain its speed and becomes slower and more irregular with each succeeding contraction. Were I to lay down one rule for the safe conduct of the second stage, I would say watch and record the rate and character of the fetal heart beat during and after each pain.

THE TOXÆMIAS OF PREGNANCY

The toxæmias of pregnancy are another subject which is ever debatable. Twenty-nine per cent of our stillbirths and macerated fetuses are the direct result of puerperal toxæmia, and 27 per cent of the women who die during pregnancy, childbed, and the puerperium, die as a

result of toxæmia, convulsions, or their sequelæ. Certain facts are known as to the etiology and the pathology of this serious condition. First, that gestation is the etiological factor; secondly, that proper intestinal hygiene and diet reduces the incidence; thirdly, that death of the fetus, or its removal, stops the toxic process. With such knowledge it would seem that we should be able to formulate a plan of action which will reduce not only the incidence of stillbirths but maternal mortality. This can and has been done.

Woman is the only vertebrate who vomits in the early months of pregnancy. No four-legged animal has this distress. Hence, one can readily see why the routine knee-chest position in the early months does so much in the human being. The woman by assuming this position raises the heavy uterus out of the pelvis and relieves the venous engorgement which is produced by its weight and physiological torsion. It may be said that pregnancy is the great efficiency test of the workings of the maternal organism, for the fetus and the uterus in their growth call for such adaptative changes in the all important organs of the mother that, unless there is perfect and harmonious efficiency on the part of all of the organs called upon to further this development, the load cannot be carried. The pituitary gland, thyroid, and parathyroids all become activated while ovulation ceases. At the same time more work is thrown upon the liver, kidneys, lungs, and heart. It is, therefore, easy to deduce that the incompetence on the part of any organ must shift the load to others and necessarily result in defective metabolism. If we study the blood chemistry and urinary output week after week throughout pregnancy, we note that there is little actual change in the blood chemistry. The blood sugar maintains its normal ratio until just before placentation takes place when there is a sharp drop, while towards the end of the fourth month the normal ratio is re-established. The uric acid and nitrogen gradually increase towards the end of pregnancy, while the carbon dioxide combining point is slightly lower than in the non-pregnant state. It is now generally admitted that a disturbance in the carbohydrate-fat ratio is a basic factor, at least in the early toxæmias.

One of the most interesting historical studies which we can make is to review the literature on hyperemesis and try to find some drug in

the pharmacopœia which has not been recommended for the relief of this trying condition. Yet, with a more rational understanding of these cases, they can be controlled by the early institution of sex and intestinal hygiene, hydrotherapy, and the free use of dextrose. In mild cases of early vomiting the patient must be impressed with the necessity of re-adjusting her mode of life, her dietetics, and her sex hygiene. Perhaps the most important of these is the latter, for it is imperative that marital abstinence be insisted upon. Malpositions should be corrected and constipation relieved. In addition to these fundamentals, the fluid intake must be increased and the carbohydrate deficiency corrected. When continuance of the vomiting causes the patient to lose weight hospitalization becomes imperative. This means rest in bed with absolute isolation. These patients cannot be treated in wards or in semi-private rooms, neither can they be allowed to see visitors or members of their family. The fluid loss must be made up by hypodermoclysis and intravenous infusions of dextrose until diuresis is produced. The average patient needs and will take care of 75 grams of glucose in 24 hours. Insulin is not necessary as the excess of glucose stimulates the pancreas, which then acts in the same way as insulin. The "spill" is taken care of by the kidneys. How long should this form of treatment be carried on? Our experience shows us that if diuresis is produced and the excess of dextrose is excreted through the urine the vomiting usually ceases, and we can give solid food with a high carbohydrate content. We seldom continue this line of treatment for longer than a week, for the results have been most gratifying. Should, however, the hyperemesis continue the uterus should be emptied under morphine and scopolamine narcosis and infiltration anæsthesia.

The recent studies of Dieckman and Schwarz seem to confirm Obata's placental theory of pre-eclampsia and eclampsia, for not only have they verified Obata's findings but they have produced the specific liver lesion, peripheral hæmorrhage and thrombosis of the portal veins and tributaries, by injections of diluted solutions of tissue fibrinogen, whatever the cause of this lesion really is. The earliest evidences of toxæmia are: (1) A rise in the systolic blood pressure. This is present in both the hepatic or nephritic type. (2) An albuminuria which

is coincident with or appears soon after the occurrence of hypertension. (3) Diminished urinary output, the quantity of urine falling below 1000 c.c. (4) An increase in the body weight beyond 25 pounds (11 kg.), the average increase in normal pregnancy. (5) The appearance of œdema in the face, hands and feet. (6) Constipation associated with "heart-burn" and epigastric distress. (7) Frontal headache. (8) Eye symptoms, ranging from spots before the eyes and blurring of vision to amaurosis.

The treatment of the pre-eclamptic state and of eclampsia is essentially medical. The obstetric problem comes in for consideration only when labour is established by the convulsive seizures. Notwithstanding the fact that convulsions cease in 52 per cent of the cases when the uterus is empty, we are not justified in any extensive series of clinical observations in making delivery the first consideration, as the woman is a poor surgical risk. Naturally, therefore, the treatment of the latter month toxæmias resolves itself into: (1) Prevention. One of the greatest strides in preventive medicine has been the ante-partum care given to the pregnant woman. It has resulted in the disappearance of eclampsia in many clinics. (2) The control of convulsions. (3) The management of labour in the presence of convulsions, when labour has already started.

The pre-eclamptic patient should be in bed. She should have her nitrogenous intake limited to just enough to sustain life. Milk and fruit juices are the foundation of her diet. Stimulation of her emunctories should be effected by producing diuresis. This may be done with distilled water, saline solutions (hypodermoclysis), and the intravenous use of glucose solutions. In the presence of œdema the intake of fluids should be restricted and diuresis stimulated by lumbar cupping, ammonium chloride and calcium chloride. The skin must always be kept active. This may be secured by having the woman rest between blankets, or by means of the electric light bath. The nitrites favour surface relaxation and increase the efficiency of external heat. When no improvement is shown pregnancy must be terminated, the selection of the method being governed by indications, always keeping in mind that the toxic patient is a poor surgical risk, bears anæsthesia poorly, is liable to shock,

and more susceptible to infection than her better equipped sister. Haste and trauma must be avoided. *In the presence of convulsions the indications are never surgical.* With the appearance of the first convulsion the woman should be placed in bed in the Trendelenburg posture, given one-fourth grain of morphine sulphate, hypodermically, and turned on the side to allow the mucus to drool from the mouth. The tongue must be protected by a gag. The bladder is emptied by catheterization. If the pressure is 150 or more, 1000 c.c. of blood may be withdrawn. This may be replaced by 500 c.c. of a 10 per cent glucose solution. The morphine is repeated in an hour, and nothing else is done unless the convulsions recur and the supervening coma increases to such a degree that the patient remains comatose between convulsions. This condition is an indication for the intravenous use of magnesium sulphate in quantities of 10 c.c. of 10 per cent solution repeated every three hours, which has a most soothing effect, diminishing the cerebral oedema and controlling the occurrence of subsequent convulsions.

The management of labour in the presence of eclamptic convulsions is based on three principles: (1) avoiding trauma; (2) preventing infection; and (3) diminishing the shock, for the eclamptic patient is a very poor surgical risk. Our plan has been to disregard the labour until complete dilatation of the cervix is obtained, when, if the head is engaged and at the spines, delivery may be expedited by the use of low forceps under light oxygen-ether narcosis added to the morphine analgesia. Section has been limited to those cases in which there was a definite obstetric indication and is not employed as a routine measure for rapid delivery. Our experience shows that prevention is the keynote of success. The toxic patient needs active treatment with the first appearance of hypertension. Convulsions may be prevented, when medical means fail to reduce tension and produce diuresis, by the induction of labour, and the treatment is essentially medical. Surgical delivery has only a limited field.

TREATMENT OF RETRO-DISPLACEMENT OF THE UTERUS

Retroversion, associated with retroflexion and some degree of descensus, which always coexists, is most commonly an acquired condition, for

even if the original retroversion was congenital the partial torsion or twist in the pelvic veins will so engorge the uterus, if continued for a long enough period, that pathological states, due to a circulatory stasis in all of the pelvic organs, must be established. The blood supply of the pelvis was apparently developed as a protection against infection, a definite line of defense, for while it is luxuriant and the muscular contraction of the uterus helps to propel the blood, there is only one valve in the entire venous circulation of the pelvis; hence, subinvolution and retro-displacement will naturally add to this circulatory stasis and produce permanent pathological lesions in the organs, tissues, and walls of the blood vessels. It is my belief, therefore, that the development of an acquired retroversion with descensus, or the exaggeration of a congenital backward displacement, is a gradual but progressive process, which always develops a chain of complications which are directly attributable to interference with the venous circulation and faulty uterine drainage, which in turn produces change in the pelvic tissues in the form of oedema, hypertrophy, and cell proliferation. Therefore, we teach and practice correction and retention of retrodisplacement. Congenital retroversion in virgins or newly married women, producing no symptoms, need no treatment. Special attention, however, should be given to the care of the rectum and pelvic colon in these women, as faecal stasis is a most common cause of pelvic complications.

At the present time there are more than one hundred different operations and modifications of original procedures on the round, broad, and uterosacral ligaments which are being practised by the general and the special surgeon for the cure of retroversion, with most disappointing end-results. Congenital displacements, or those congenital versions to which acquired flexions have been added, are by far the most difficult to cure, for so much depends on the degree of: (1) cervical invagination; (2) the position of the cervix and its relation to the vaginal axis; (3) the length of the uterosacral ligaments; (4) the inclination of the brim of the pelvis; (5) the depth and inclination of the symphysis; (6) the strength and development of the round ligaments.

When the accomplishment of a result depends upon the study of so many different

factors, is it any wonder that we often err in our selection of the type of procedures or in the detail of technique? The operation for the particular case must be "Mrs. Smith's" operation, not a routine surgical procedure applied to different anatomical conditions. Probably, with the exception of the curette or stem pessary, no gynæcological procedure has caused more unnecessary operating, and all that this means in morbidity and mortality, than the many operations for retrodisplacement. There is an instrument known in history as a pessary (long since forgotten by some), which has many virtues that are unappreciated by our surgical friends. A pessary will cure an acquired retroversion if the uterus can be completely replaced, and if there is sufficient muscular structure in the pelvic floor to hold the pessary in place. The pessary does not correct a retroversion but retains the replaced organ in anteversion after the uterine misplacement has been manually or posturally corrected. It anteverts and raises the uterus in the pelvis by raising the upper part of the posterior wall which makes upward and backward traction on the cervix. In the mechanics of the pessary the posterior vaginal wall runs over the posterior or upper bar of the pessary as a pulley and draws the cervix upward and backward, while the anterior bar takes its purchase and rests on the pubic shelf behind the pubes, being retained in this position by the pelvic floor. In this way it acts as a scaffold in supporting the anterior vaginal wall.

If proper care were given the woman at her confinement, or at the time of her abortion, and during the post-partum and post-abortion periods, more than 80 per cent of the retroversions that fall into the hands of operating surgeons, competent or incompetent, would be cured by palliative measures. Prior to 1910, in our follow-up clinic, the incidence of backward displacements which occurred in women who were discharged from the hospital on the

fourteenth day with a uterus in antelexion or antelexed retroposition was 38 per cent.

In 1910, we began our post-partum studies by establishing a post-partum follow-up clinic. Each patient before leaving the hospital was instructed to assume the knee-chest position night and morning, and taught the "monkey trot" (walking on all fours), and told to return to the clinic one month from date of her discharge from the hospital. If at this visit the uterus was retroverted, it was replaced and a properly fitting pessary adjusted to retain it in ante-version. The patient was then instructed in the care of the pessary, with a result that at the end of three months only 2 per cent of our patients had uncorrected retro-displacements. Fewer and fewer operations are being done during the child-bearing period.

These remarks upon the advantages of the pessary would not be complete without mention of the contra-indications. A pessary is contra-indicated when any of the following conditions are present: (1) a large relaxed introitus, without sufficient muscular structure in the pelvic floor to hold a pessary in place; (2) in lacerations of the cervix with hyperplastic change and parametric inflammation in the base of the broad ligaments or in the uterosacral ligaments; (3) in inflammation of the pelvic peritoneum; (4) in the presence of tender prolapsed ovaries; (5) in the presence of posterior uterine adhesions limiting mobility of the uterus.

All parametric, peritoneal, and tubo-ovarian inflammation must be quiescent, and all exudative processes completely absorbed before a pessary can be employed. The requirements imply the necessity of preliminary local treatment in the form of posture, douches, boric glyceride packs, and, above all,—TIME.

[Dr. Polak concluded his paper with some remarks on the present status of the therapy of cancer.—Ed.]

STREPTOCOCCUS CARRIERS AND SCARLET FEVER.—E. A. Lane and Edith A. Beckler, from comparative observations on children attending schools in districts where scarlet fever had been prevalent and children with no such history of exposure, came to the conclusion that there was no justification for regarding the presence of hæmolytic streptococci in throat swabs as a reason for exclusion from school. Hæmolytic streptococci were found to be fairly common among

all groups of children, and of quite uniform prevalence in the months of February and March, when the experiments were made. According to the authors, until a sufficiently precise technique is available to identify the scarlet fever organism, and be sufficiently simple for general application, the control of scarlet fever must continue without the aid of throat cultures.—*Brit. M. J.* 2: Epit. 37, Sept. 14, 1929.

THE TECHNIQUE OF BRONCHOGRAPHY FOR THE GENERAL PRACTITIONER*

BY NORMAN BETHUNE, M.B. (TOR.), F.R.C.S. (EDIN.),

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BY bronchography is meant the procedure of outlining the bronchial tree by means of an opaque substance throwing a dense shadow on an x-ray film. It maps out the great canals of the lungs from the trachea down to the terminal ductus alveolares. Its object is to disclose variations in position, course, size, dilatations and constrictions of the bronchi—in short, to disclose variations from the normal to be interpreted in terms of gross pathological conditions.

Investigation in this field, up to the time of the introduction of iodized oil, was limited in scope and uncertain in precision of diagnosis. The field of the bronchoscopist is limited. He can see just so far, and often his findings are inconclusive. Too frequently the diseased area lies beyond his field of vision. The roentgenologist relies on shadows, shown as mottling or density along the bronchial course, which he interprets as peribronchial infiltration or thickening of the lymphatics accompanying the trunks. His evidence, too, often conflicts with clinical findings, on the one hand asserting disease to be present where no signs can be elicited, or, on the other, an inability to agree with the clinical findings of disease. The internist relies on constitutional symptoms and clinical signs to interpret bronchial disease. Without the evidence of bronchography all three are at times uncertain, even as to the presence of disease, much more as to its extent. Bronchography has opened up a new world. It offers, as does no other method, precise and authoritative evidence of gross disease. It yields both positive and negative information. While a great deal has been written of its usefulness, and less of its limitations, still, as a means of differentiation between two such diseases as bronchitis and bronchiectasis, it stands supreme. It has made the clinical diagnosis of chronic bronchitis, unsupported by evidence from x-ray and iodized oil tests, one open to suspicion as to its accuracy.

With such a method as the injection of iodized oil, it is contended that the general practitioner can now diagnose bronchiectasis with ease and certainty. The technique is simple. It is an office procedure, easy to the patient, and without, in the vast majority of cases, any bad effects. If such a general practitioner has an x-ray outfit of his own, or has access to one in a hospital, he is quite capable of injecting iodized oil into the bronchi without the aid of the specialist.

While the laryngologist and bronchoscopist still maintain the supremacy of the bronchoscope for the injection of lipiodol, in most cases this claim cannot be substantiated by results. The specialist quite naturally believes in his own instruments. But it is only in exceptional instances (perhaps 5 per cent) that iodized oil injected through a bronchoscope will give any evidence additional to that obtained by the simpler injection methods. Thus, for instance, to omit a bronchoscopic examination in the case of a patient with lung suppuration may mean the missing of an unsuspected foreign body or early bronchial carcinoma. Nevertheless, bronchoscopy, as a routine, merely for the injection of iodized oil, may be said to be unwarranted. No one denies, of course, its real diagnostic and therapeutic usefulness in the aspiration of early lung abscess, in atelectasis and some post-operative pneumonias, in the extraction of foreign bodies, and the diagnosis of bronchial tumours. In children under twelve years of age it stands perhaps on an equal footing with the crico-thyroid route for the injection of iodized oil. In certain lesions of the upper lobe, it may be successful when the simpler plan fails.

For adults there are two simple methods—the second merely an extension of the first. No special instruments are needed and the patient is subjected to no discomfort. The first is the well-known Pritchard's method, and the second its modification—the supra-glottal or intra-vestibular technique. In the first, the oil is dropped in a gentle stream on the back of the

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forward-drawn tongue and inhaled. In the second, it is injected through a curved cannula just over the top of the epiglottis into the vestibule of the larynx. The first method is for basal lesions; the second for upper lobe ones.

TECHNIQUE

Instruments: (See Fig. 1).

One 30 c.c. (better still a 50 c.c.) glass Luer syringe.
 One straight silver Eustachian catheter—No. 3 or 4 size.
 One curved silver Eustachian catheter—No. 3 or 4 size.
 Yankauer syringe. Laryngeal mirror.
 Spirit lamp. Head light. Small glass graduate.
 Ten per cent cocaine solution. Absorbent cotton.
 One straight applicator.
 One curved laryngeal applicator. Gauze squares.
 Two kidney dishes. Two containers of iodized oil.
 The author's iodized oil gun. This is a refinement of the syringe, but is not essential.

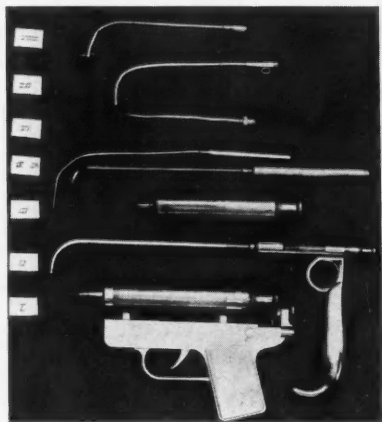


FIG. 1

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|------------------------------|-----------------------------------|
| 1. Author's iodized oil gun. | 5. Laryngeal applicator. |
| 2. Yankauer syringe. | 6. Straight cannula. |
| 3. Luer syringe. | 7. Curved cannula. |
| 4. Laryngeal mirror. | 8. Tracheal cannula (rubber tip). |

(1) *Preliminaries.*—No special preliminary medication is necessary, except in the case of patients who are coughing a great deal. For such, morphia, gr. 1/6, atropin, gr. 1/150, one hour beforehand will be found useful. The anti-spasmodic, not the anæsthetic, effect is wanted. About 1 per cent of cases will need this. The first important step is to have the bronchi as empty of secretion as possible. To this end, posture the patient with his head down over the bed or table for ten minutes. Encourage coughing. Not infrequently this will dislodge sputum which the patient may deny ever raising. An amount of more than half an ounce is suspicious of bronchiectasis. Save this for dark field examination for spirochætes, fusiform bacilli, and vibrios. If this residual secretion is not removed by postural drainage, (and occasionally the amount brought up is sur-

prisingly large; as much as 8 ounces is not infrequent), the lipiodol injection will be defeated on two counts: first, the oil will not penetrate the plugged bronchi; and, secondly, the weight of the oil, added to the retained bronchial secretions, will precipitate a coughing reflex, which the oil of itself would not provoke. Do the injection in the x-ray room. Do not permit the patient to walk along a corridor, or from one room to another, after the oil has been injected, lest he cough and the picture be ruined.

Have everything ready before you start, so that there will be no delay between injection and filming. Put the oil in its aluminum container into one kidney dish containing hot water. Have the tray of instruments on a low table on the right. Test the fluoroscope. Have the cassette ready in the x-ray machine. Have the patient undressed to the waist and clad in a flannel jacket with no buttons or pins attached. Place him in a chair and sit down opposite him. Begin by explaining fully what you are about to do and how you are going to do it; his co-operation is essential to success. Allay his apprehensions by an assurance of manner and by insistence on the ease of the operation and its lack of discomfort to himself. Explain that the oil is going to be dropped gently on the back of the tongue and that he can inhale it without choking, suffocation or pain; that no instruments (after the preliminary local anæsthetic) are going to be put down his throat. Tell him he may feel and hear a slight rattling in his throat as the oil goes down, but that this will disappear if he takes a few deep breaths. The two major admonitions to be reiterated are "*Don't cough and don't swallow.*" If the patient coughs it is usually the operator's fault—faulty preliminary postural drainage or incomplete local anæsthesia. If he swallows, it is also usually the operator's fault, either because he has not abolished the swallowing reflex (this is not necessary in most cases) or the tongue is not being held far enough forward. With the tongue held well forward, it is extremely difficult, even impossible, to swallow.

Now teach the patient how he should breathe. Take a square of gauze in the left hand. Have him protrude the tongue as far forward as possible, and wrap the gauze around its tip and pull firmly forward. Some patients prefer to hold their own tongues forward. Be careful not to pull so forcibly that the tongue is

bruised by the lower teeth. Breathing is done with rather short forceful inhalations, but not too deeply, as this may provoke coughing or spray the oil about the pharynx. It must be loud enough to be distinctly heard. This preliminary drill in breathing is very important, and should be kept up for a few minutes. Allow a minute's rest, then resume it until the patient gets accustomed to breathing easily without spasm. Now explain that you are about to deaden the back of the throat with a little anæsthetic.

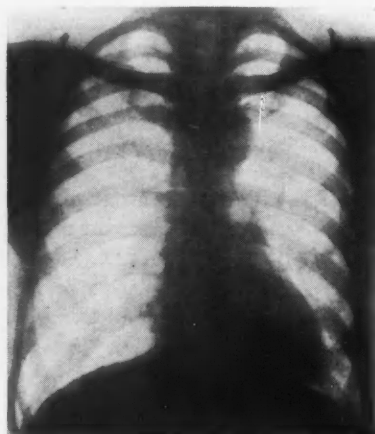


FIG. 2
Left basal bronchiectasis before and after injection of iodized oil.

(2) *The anæsthesia for basal lesions.*—Moisten a cotton swab on an applicator with a little 10 per cent cocaine solution. Touch the base of the tongue, the soft palate, the uvula, the tonsils, the back of the pharynx, the epiglottis and valleculæ. Do not remove the applicator on account of gagging. Instruct the patient to expectorate immediately afterwards. The solution must not be swallowed. Give a minute's rest; then test the local anæsthesia. Usually one swab is all that is necessary. I think that less cocaine is used in swabbing than in spraying. The swallowing reflex is not usually abolished. However, if the patient gags and swallows in spite of this anæsthetic, a more complete local anæsthesia is necessary, but this occurs in only about 10 per cent of cases. Gagging will usually stop if sufficient time is taken and the mouth repeatedly opened, and the applicator introduced without touching any structure. If it does not do so, try bandaging the eyes, as it may be due to an ocular reflex. But in the vast majority of

cases, the patient's fears become allayed quickly, as with practice he feels that it is easy enough to breathe with the tongue forward.

(3) *The anæsthesia for upper lobe lesions.*—The procedure is a little different from this point on. The anæsthesia must be more complete. Apply moistened swabs on a curved laryngeal applicator to each piriform fossa, the back of the epiglottis, and the walls of the vestibule. This is done with rather a large swab, which, as it descends in the vestibule of the larynx, is grasped by the contracting walls,

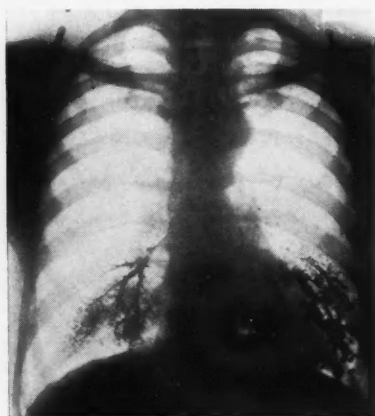


FIG. 3

the cocaine solution being thus squeezed out, and the larynx as far down as the vocal cords is therefore thoroughly anæsthetized. When the vocal cords and interarytenoid space can be touched without exciting cough the anæsthesia is well done. Occasionally, 1 c.c. of a 2 per cent cocaine solution may advantageously be injected between the cords with a Yankauer syringe. This will anæsthetize the carina of the trachea which is exquisitely sensitive.

(4) *The injection for basal lesions.*—Take the oil out of the warm water bath and empty both containers into the large syringe. Adjust the straight cannula. Wipe off any oil from the fingers or syringe barrel. Pull the tongue forward with the left hand and rehearse breathing exercises. If the lesion is thought to be on the left side, fill it first by leaning the patient to the left. If the body is held perfectly upright, the oil will run mainly into the right stem bronchus, which is at an angle of only 25 degrees in contrast with the 75 degree angle of the left stem bronchus. As the injection

proceeds, the body is inclined more and more to the selected side. A chair placed beside the patient enables him to lean on his elbow as he inclines his body. It is useful to have the head held as upright as possible, even though the body inclines.



FIG. 4

Right basal bronchiectasis; left side normal after injection; anterior and lateral views.

the films are seen. The oil shows up densely black on the screen like branching black coral. Do not waste time trying to interpret the lesions seen but, if the filling is satisfactory for position and amount, take a lateral flat



FIG. 5

Now for the injection. With the tongue drawn well forward with the operator's left hand, the chin up, the straight cannula, attached to the syringe, is introduced into the mouth and rested, if desired, against the upper teeth. The tip of the cannula is now over the base of the tongue in the central line, but held just above its surface, not touching. Do not try to drop the oil down the larynx without dribbling it first upon the tongue. It should run down in a gentle little stream on to the base, into the valleculæ, and so into the larynx. Provided that the tongue is held well forward, chin well up, that no swallowing occurs, and that the patient breathes with short sharp inhalations, the oil really cannot be prevented from entering the trachea. Inject 15 or 20 c.c. Incline the patient well over, and allow 30 seconds for the oil to descend after injection. The patient's tongue may now be released. He may spit out, without coughing, what is in his mouth and throat. Then place him standing up immediately before the fluoroscope. This is not for diagnosis, but a control on the amount of filling. One may find that not enough has been injected, or too much, or that the oil has entered the œsophagus and stomach. This check up with the fluoroscope will save disappointment when

film at once. Then immediately fill the opposite lung with an additional 15 or 20 c.c. and take an antero-posterior stereoscopic view. It is not much use to take a lateral or diagonal film with both sides filled, as the superposition of both bronchial trees makes the reading of such a film difficult to interpret. The whole procedure should be run off smoothly, with no delays between injection, fluoroscopy, and x-ray. During the fluoroscopy and x-ray the patient must be warned not to cough. A cough will drive the oil upwards into the trachea and



FIG. 6.—Bilateral basal bronchiectasis (predominantly right side) after injection of iodized oil.

outwards into the alveoli, and a characteristic patchy "snow-storm" effect will be seen on the film. This snow storm will spoil the picture.

(5) *The injection for upper lobe lesions.*—Speed and team work between operator, x-ray technician, and patient is essential. The

cian, on instruction, presses the switch and the film is taken. Do not attempt a check-up with the fluoroscope. You know that by this method the oil has entered the trachea and you must trust that the amount injected is sufficient. (See illustrations 8 and 9.)



FIG. 7

Right upper lobe abscess cavity not demonstrated by x-ray before iodized oil injection.
Note: the spot on the right side (Fig. 8) is not a button.

patient sits on the table with his legs over the side. The cassette is placed beside the patient, so that when he lies back he will be in position over it. The tube is adjusted for height, but pulled back. The technician stands at the instrument board ready to press the button. Now draw the tongue well forward and let the patient hold it. A laryngeal mirror is introduced with the left hand and the syringe with the curved laryngeal cannula attached is held in the operator's right hand. Under vision, the cannula is placed accurately behind the epiglottis, with its tip in the vestibule of the larynx. A short, soft rubber tube is useful to attach to the cannula, if it is desired to put it further down between the vocal cords. Once the cannula is in position, the mirror is withdrawn and the left hand steadies the barrel of the syringe, while the right hand controls the plunger (using the author's gun, all that is necessary is to pull the trigger with the right index finger as the gun butt is held firmly in the right hand alone.) Now lean the patient well down and back on the selected side. Inject 10 or 15 c.c. as quickly as possible. At the end of injection the patient should be lying flat on the table. A few, sharp, short respirations will distribute the oil to the upper lobe. Pull the x-ray tube over into position. The techni-



FIG. 8

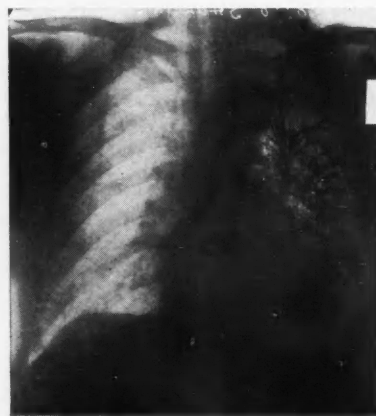


FIG. 9.—Normal; complete left lung injection.

SOME PRACTICAL NOTES

1. The crico-thyroid route should not be used for adults.
2. Choose the bronchoscopic method for children; for suspected foreign bodies, tumours, etc., in which case the injection of iodized oil is the logical thing to do, once the bronchoscope has been used for its major purpose of visual diagnosis.
3. Co-operation, to be obtained through education of the patient, is the secret of success.
4. Avoid the injection of iodized oil in pul-

monary tuberculosis, whether the sputum is positive or not. Its use is unwarranted. Archibald and Brown¹ have demonstrated the dangers of such a procedure. The only exception is in old tuberculous bronchiectasis, with negative sputum, persisting after thoracoplastic operations.

5. Do not diagnose "active tuberculosis of the lungs" on x-ray evidence alone, without first asking the patient if he has ever had an injection of iodized oil. It may simulate for the unwary an acute exudative lesion. We have seen iodized oil in the lung as long as three years after injection. Although the greater quantity is usually coughed up in a few days, a small amount of oil can, not infrequently, be seen for months after. It produces no symptoms.

6. Coughing during injection ruins all. If you cannot control the cough by better anaesthetization, wait a day and alter your technique. Give a preliminary dose of morphia, gr. 1/6, and atropin, gr. 1/150. The cough sprays the iodized oil out of the bronchi into the

alveoli. Here it is worse than useless. You desire bronchial filling, not alveolar detail.

7. Do not be alarmed if in your early attempts iodized oil is swallowed. The oil, although broken down by the gastric juice with liberation of iodine, appears to do no harm. An occasional case of iodism has been reported. The iodine is not liberated in the lungs. We have had no cases of iodine rash in spite of the inadvertent injection of as much as 40 c.c. of oil into the stomach.

8. Do not expect to fill a lung abscess cavity which does not show a fluid level. If it does show a fluid level injection of iodized oil is unnecessary. The bronchi leading out of a cavity are frequently plugged with thick mucous secretions and pus, which only at intervals are expelled. After such periodic clearing, such a cavity may be filled with lipiodol (Fig. 8).

REFERENCE

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ANATOMY, PHYSIOLOGY AND PATHOLOGY OF THE LACRIMAL APPARATUS, MORE ESPECIALLY THE LACRIMAL SAC AND DUCT*

BY HARRY VANDERBILT WÜRDEMANN, M.D.

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THE lacrimal gland secretes a salty, watery fluid which flows diagonally over the eye, keeping it moist, and, with the secretion from the Meibomian glands, lubricates the conjunctival sac. The tears normally pass first through the canaliculi, then into the lacrimal sac, then through the lacrimal canal, emerging by a minute opening into the inferior meatus of the nose, immediately under the anterior third of the inferior turbinated body.

There are few diseases or anomalies of the secretory organ. These are practically limited to adenitis and tumours. Anomalies of the lacrimal passage, however, are common, but those diseases of the apparatus which are not associated with conjunctival, nasal or sinus disease are practically nonexistent. The continuation of a conjunctival affection to the

lacrimal passage, causing obstruction of the puncta of the canaliculi is constantly noted by the ophthalmologist and readily relieved. It is not likely that infections of the sac causing dacryocystitis are caused from conjunctival disease, as they would be very commonly noted in ordinary conjunctivitis, such as blenorrhoea and trachoma. It may be said that practically all infections of the lacrimal sac arise from associated conditions in the nasal passages and sinuses, in which the rhinologist is interested and oftentimes effects a cure by nasal treatment or operations.

The lacrimal gland is situated in the upper and outer portion of the orbit in front of the palpebral ligaments, and discharges its secretion upon the conjunctival surface through several orifices behind the retrotarsal fold. It has two parts, the inferior portion at times being so much separated from the superior as to be practically a second gland.

The skull shows a depression behind the nasal process of the superior maxilla, bounded by the

* From a Symposium on Chronic Dacryocystitis delivered at the meeting of the Western Section of the American Laryngological, Rhinological and Otological Society, Inc., Victoria, B.C., January 16, 1929.

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anterior ridge, the crista lacrimalis anteriorly, and posteriorly by the crista lacrimalis posterior, which is more distinct, and part of the lacrimal bone, forming the fossa for the lacrimal sac. These two crests unite below to form a narrow inverted arch, which makes the lower part of the lacrimal fossa and its transition into the bony naso-lacrimal canal. The floor of the lacrimal fossa, formed half by the lacrimal bone and half by the frontal process of the superior maxilla at its upper and the fossa, is shallower. The bone in this region is very thin.

The lacrimal fossa is directly continuous with the osseous canal, which is formed by the superior maxilla, lacrimal and inferior turbinated bones, the superior maxilla forming the larger part of it. From the posterior part of the frontal process and a part of the body, this makes a gutter which is converted into a canal by the lacrimal bone above and the lacrimal process of the inferior turbinate below, the opening into the nasal orifice or ostium lacrimale being immediately below the line of attachment of the inferior turbinal bone. This canal measures from 3 to 4 mm. in diameter and varies from 12 to 24 mm. in length. In various skulls there will be found variations in the three facial bones which make it. The canal is irregular, being larger above, constricted toward the middle and enlarged below. It may be round or irregularly oval, depending upon the conformation of the skull. In flat-faced people, like the Asiatics, it is compressed anteriorly; in those with aquiline noses and narrow pupillary distances it is compressed laterally. The direction depends upon the conformation of the facial skeleton. It is influenced by the width of the nasal bridge, the piriform aperture, and the inferior meatus. The usual course is a slight divergence of the canals as they pass down and somewhat backwards from the angle of the orbit mesially between the second bicuspid and the first molar teeth.

The nasal duct is lined with periosteum and mucous membrane; the latter continues with the conjunctiva through the puncta, canaliculi, lacrimal sac and nasal duct and at the ostium with the mucous membrane of the nose. At the lower portion of the nasal duct there is a flap of mucous membrane forming an imperfect valve, the valve of Hasner. In the canaliculi the lining membrane is scaly, but in the lacrimal sac and nasal duct the epithelium is ciliated, as in the nose. At the junction of the tear sac with the nasal duct a valve has been described

by Krause and Biraud. At this place there is either a simple elevation of the mucous membrane or a valvelike structure which may even have a central opening. It must be remembered that the nasal duct is not usually a straight passage, as is illustrated in most anatomical works, but is decidedly curved or may have a bend, usually about the middle portion. The canal may have invaginations of the mucous membrane or even diverticula. This is important to remember in the use of lacrimal sounds, which may readily pass into these invaginations and produce a false passage, with the ultimate danger of atresia in healing or of infection.

The lacrimal puncta are usually single, one above and one below. Multiple puncta have been described. These puncta are not only the openings of siphons but they are opened and closed by the winking of the lids, the muscular pressure of which, as well as the contraction of the tensor tarsi muscle, causes a pumplike suction which forces the fluid from the canaliculi into the sac and downwards into the nose. The passage of this fluid is also aided by capillary attraction and by the bellows-like effect of inspiration and expiration. Radical dilatation, and especially slitting of the canaliculi, immediately negates most of these functions, leaving only gravitation, capillary attraction, and the effect of the air currents in the nose to pull the fluids down. Therefore, procedures directed toward securing lacrimal drainage should consider all these mechanical principles.

Obstruction of the lacrimal passages is the first thing that causes disease of the lacrimal sac, aside from systemic diseases, such as syphilis or tuberculosis, which are uncommon. The puncta may be occluded by caseous masses from the secretions of the Meibomian glands, or by foreign bodies; likewise occlusion of the canaliculi and the ostium occurs in congestion of the nasal membrane. The former needs ophthalmic treatment, the latter nasal. Simple dilatation of the puncta and canal and syringing of the sac will remove practically all kinds of stoppage of the passages without the necessity of probing. When the latter is resorted to, as large probes as can be passed should be inserted and allowed to remain a considerable length of time in order to open the passage, thereby starting the current of tears to the nose, which, if established for a short time, will secure permanency of the passages. Bony occlusion of the canal is rare; stoppage is nearly always due to mucous mem-

brane hypertrophy and imperfect drainage. If the canaliculi become stopped by detritus, which contains pathogenic pus-producing organisms, then the lacrimal sac becomes affected, first with swelling which may go on to pus production; then the condition of dacryocystitis is produced. This then passes on to ulceration and perforation of the mucous membrane with involvement of the underlying and overlying structures, eventuating in so-called abscess of the lacrimal sac. A mucocele may develop, the contents of which may be expressed by pressure through the canaliculi and puncta, but not usually through the nose, as the obstruction is greater below. If drainage cannot be secured through the nasal duct to the nose, the cure of this condition, from the ophthalmological standpoint, is an excision of the lacrimal sac by one of the several methods later to be given. Within recent years attempts to effect a radical cure of diseases of the lacrimal efferent organs have become much more numerous, but, as Hirschberg expressed it, "In the first third of the nineteenth century Ophthalmology got rid of the idea of making artificial openings into the nasal cavity, which is, indeed, a snare and a delusion." Now, in the first quarter of the twentieth century, the general opinion of the eye surgeons favours extirpation of the sac.

The first cut is through the skin and superficial fascia, when the sac is exposed, the upper portion being covered by the ligament of the tensor tarsi, the palpebral portion of the orbicularis and the dense white subjacent and deep fascia. The anterior lacrimal crest is exposed and after the deep fascia has been removed the delicate posterior lacrimal crest is seen; the free extremity of the sac is firmly held down by the ligament and attached to the periosteum, the lower part is free.

The lacrimal apparatus may be, but seldom is, affected by accessory sinus disease. The relations of the sac and the duct to these sinuses, however, are important when it comes to the radical cure of dacryocystitis by operation. In newborn infants the nasal duct is found 1.5 to 2 mm. in front of the anterior end of the antrum. In children of eight months it is one or more millimetres farther forward. The anterior ethmoid cells may be sufficiently forward to form the posterior portion of the bony sulcus of the lacrimal sac. Authors generally contend that the wall of the lacrimal fossa is seldom pneumatic and that the lacrimal sac can never be surrounded by nasal accessory cavities. The mor-

phology shows that the anterior ethmoid cells belonging to the uncinat process and agger nasi occasionally extend into the region of the lacrimal sac and nasal duct. If the frontal sinus is very much enlarged it may extend down as far as the region of the lacrimal bone and enter into relationship with the lacrimal sac. Closure of the nasal duct may be brought about by periostitis of the bone, by a foreign body in the nose, dental cysts, syphilitic or tuberculous lesions, by rhinoscleroma, by synechia between the turbinate and the floor of the nose owing to periostitis in the neighbourhood of the ostium and the formation of scar tissue. Changes in the nose which take up space or cause excessive pressure, such as polypi, bone cysts, cystic swelling of the middle turbinal and spurs and deviation of the septum, may close the passage. In atrophic rhinitis extension with atrophy of the bony wall has been observed. Invasion of the efferent lacrimal organs by chronic suppuration of the frontal sinuses, ethmoid cells, and maxillary antrum has been described. Some authors have claimed that both phlegmonous inflammation of the lacrimal sac and fistulous processes are preceded by disease of the maxillary antrum, but it is probable that this seldom occurs. What happens is that in antrum suppuration there are associated changes in the nasal mucosa which spread through the nasal duct.

To sum up, it seems to be generally agreed that direct propagation of nasal disease into the lacrimal passages is uncommon, but in the majority of cases diseases of the lacrimal sac are nasal in origin through continuity of the mucous membrane of the nose and that of the tear passages. It may also happen that ethmoid and antrum suppuration may be secondary to suppuration in the lacrimal sac. From the foregoing anatomical, physiological, and pathological observations, it can be seen that nasal treatment is indicated in addition to conservative ophthalmological measures, and that radical surgical procedures should be reserved for cases in which drainage cannot be obtained by such, and that where drainage cannot be secured radical operation should be done, which in the majority of cases, means, from the standpoint of the ophthalmologist, a complete excision of the diseased lacrimal sac, if possible, with drainage through to the nose.

(The balance of the lecture consisted of the exposition and description of twenty-eight lantern slides made from macroscopic and microscopic specimens by the author, and reproductions of illustrations from Schaeffer, Ramsey, Onodi, and specimens from the Army Medical Museum.)

THE TREATMENT OF CHRONIC DACRYOCYSTITIS FROM THE
VIEWPOINT OF THE OPHTHALMOLOGIST*

BY GLEN CAMPBELL, M.D.,

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CHRONIC daeryocystitis and indeed all of the conditions of the lacrimal organs have interested me for many years. At the outset I must state that I am still doing the total extirpation of the lacrimal sac by the external route.

From the numerous reports that have appeared in the medical press during the past few years one is impressed with the belief expressed therein that conditions of the lacrimal sac belong exclusively to the rhinologist, and one is struck also with the numerous methods adopted to relieve the conditions causing a disturbance of its functions. Modification after modification of these intranasal operations on the lacrimal sac has been suggested and their number is legion. What is the reason for this? As the years roll on, one thing constantly impresses itself upon me, and it is this; we are at the best but general practitioners in thought and in action; those who are not should be. We cannot treat an eye solely as an eye. We must not forget that there is a nose and group of nasal sinuses, very close neighbours of the eye, a brain and a nervous system, a heart, a blood, which contains so many potential tragedies, to say nothing of the many possible focal points of infection, etc., all of which, without exception, confront us daily. Is there not a tendency for some of us, at times, to become a little too centred in our own particular field of work?

The studies of Whitnall,¹ and of Schaeffer² have thrown much light on the subject of the lacrimal apparatus, and, we, as clinicians in that particular field, owe these two masters a debt of gratitude for their painstaking work. I have been much interested and impressed with the work of both.

Radiography of the lacrimal passages, with which I have had no experience, has given us something new and valuable on this subject

also, and will no doubt be a great help in studying some of our lacrimal sac cases. The work of D. M. Campbell, J. M. Carter, and H. Doub³ on this subject is both interesting and instructive. An interesting finding by Santos Fernandes,⁴ who found by comparative measurements the lacrimal canal to be longer, narrower and more crooked in the white race than the negro, which he thinks accounts for the frequency of affections of the lacrimal passage in the white race, and their extreme rarity in the negro, whose duct is straight, wide and short. In a pathological report of 100 cases of daeryocystitis, Rollet and Bussy⁵ record anatomical peculiarities in a certain percentage of cases, but say that the determining cause is most frequently an infection of nasal origin. Schaeffer,² in speaking of the abundance of venus plexuses in the sac and duct, states that the real significance of this has not been determined, and he wonders whether this stratum of the lacrimal sac and duct is subject to the same influences as are the erectile tissues of the nose, and whether reflex neuroses may be a factor. A disease focus might invoke a reflex turgescence and thus cause a possible physiological occlusion of the naso-lacrimal duct, and he wonders whether the lacrimal sac and the naso-lacrimal duct are merely conveyors of fluid (tears), or whether an additional function should be ascribed to them. It is the general opinion, apparently, that the origin of daeryocystitis in the large majority of cases is to be found in the nose.

Does it not suggest itself to all of us that prophylaxis should play a greater rôle in those conditions which have an etiological factor in the nose. Who is better able to deal with this aspect of the subject than the rhinologist? Why should not more attention be paid to this in the routine medical examination? Is this examination as thorough as we workers in this particular field think it should be? I do not

* From a Symposium on Chronic Daeryocystitis delivered at the meeting of the Western Section of the American Laryngological, Rhinological and Otological Society, Inc., Victoria, B.C., January 16, 1929.

believe it is. The subject of lachrimation is so likely to be passed over lightly, and it so frequently happens that the condition becomes a chronic one before it comes under our observation, or before we decide to do something for it. Prevention in these cases, I believe, has not received sufficient attention. In the early stages, where only an epiphora, or lachrimation, or both, are present, an x-ray examination and a direct examination of the nostrils might reveal gross pathological conditions for which appropriate treatment would often bring about excellent results. I firmly believe that the ophthalmologist, or anyone else, who directs his attention solely to the treatment of the lacrimal sac and duct, even by syringing or by the use of probes, is not only likely to produce much damage to the parts, but may fail to recognize a different pathological condition from that confined solely to the nasal duct. Attention to the nose and nasal sinuses, with judicious pressing out of the contents of the sac, and the use of a mild collyrium, will in many cases not only relieve the epiphora but prevent the condition in the lacrimal sac and duct from becoming a chronic one. Indeed, a thorough investigation of the entire subject of lachrimation is necessary. We must differentiate an obstruction and its location from a simple hyperactivity of the lacrimal and other glands, which produce a fluid which we call tears. To be good surgeons, we must first be good physicians.

May I be allowed to digress for a moment on the subject of probes? About twenty years ago I expressed my views before the British Columbia Medical Association, and also a year or two later at the Pacific Coast Oto-Ophthalmological Society in Seattle concerning the use of probes, only to condemn them for the treatment of any condition of the lacrimal sac and duct. It is remarkable, in reviewing the literature, even that of the past year, how often one sees the use of probes mentioned in the treatment of these conditions. At the meeting, above referred to I referred to Edward Jackson,⁶ who believed that lacrimal obstruction, shown as soon as the secretion of the tears has begun, was due to the delayed development of the nasal end of the lacrimal duct, unless disease in the nose or parts adjoining the lacrimal passages offered a different explanation. Jackson referred to autopsies made in

newborn children by De Vlocovich and Rochon Duvigneaud, who reported thirty cases in which the orifice connecting the lacrimal canal with the nose had not been opened. As the lacrimal secretion is not noticeable for several weeks after birth no functional demand is made upon the lacrimal passages and in many cases of delayed opening of the duct into the nose no symptoms are noticed, as the opening occurs in time to meet any demand upon it.

Ida C. Mann⁷ describes this in these words, "The lumen of the canalicular system is first completely blocked by epithelial cells. These begin to soften at about the 50 mm. stage, so that true canalization starts soon after this. In some instances it is not complete at birth and hence a condition of congenital lacrimal obstruction is produced. This is simply due to a delay in canalization and is not in its origin inflammatory."

As to the treatment of this condition it has been my practice for many years simply to press gently over the region of the sac with the thumb once a day. I instruct the mother how this may be done. This, together with the use of a mild solution of boracic acid to the conjunctiva, two or three times a day, is all that is necessary. The earlier the cases come under observation the sooner the condition becomes well and the results are really brilliant, some cases recovering in from two to six days. Older children coming under observation would naturally take longer. I have seen it require as many as nine months for cure to take place. The placing of a young child under a general anæsthetic and the passing a probe down the lacrimal duct is certainly very cruel handling, to say the least.

My conception of the physiology of the parts concerned in the passages of the tears from the conjunctival sac to the nose has always led me to believe that this function is greatly interfered with through the gross lesion we meet with in the case of a chronic dacryocystitis. In the words of Whitnall, "It is probable that the capillarity of the puncta primarily suffices to draw off from the conjunctival sac any slight surplus of fluid left over from evaporation; that the canaliculi, shortened and dilated in the act of winking, can assist the drainage; and the lacrimal sac participates in the removal of excess fluid by aspiration, being slightly dilated

in the act of winking, and markedly so in forced closure of the lids; the elastic rebound of the sac to its resting dimensions drives the fluid into the nasal duct, whence the flow into the nasal cavity is directed by gravity." Fuchs⁸ says "the sac must have some action as is shown by the fact that in atony of this structure the proper conduction of tears is arrested." To illustrate:—

A boy of thirteen years came to see me a few years ago with the history that the left eye had been watering all his life and pus had been noticed for the past few years. The contents of the sac could by pressure be expressed through each canaliculus, and it was his habit to regularly empty the sac himself in this way. In syringing, the solution would not pass through to the nose. There was a congenital abnormality of the anterior end of the inferior turbinate body in this case, and it was probably a case of persistent lacrimo-nasal membrane, as described by Schaeffer. However, after removing the anterior half of the inferior turbinate body, I was able by the use of the syringe to pass the solution through to the nose quite readily without any pressure. The sac, however, would continue to fill from time to time, and eventually I had to remove it. One year later I saw this boy and he reported that there had been no lacerimation since. I saw him again three years later, when he returned with a foreign body in the cornea of the eye of the same side, of two days' standing. He was engaged as a motor mechanic. Recovery was uneventful and he reported again that there had been no lacerimation of the eye.

I believe all of us have had the experience, too, in cases that have been treated elsewhere with probes, cases in which without any pressure, with the use of the syringe, the solution would pass through to the nose, and the sac would again become filled with secretion. There is no doubt in my mind that in these chronic cases this function of driving the tears into the nose is materially interfered with, and hence, there will always remain the possibility, and indeed the probability, of a fresh infection of the sac taking place.

Many years ago I had several sacs examined pathologically and the findings were exactly the same as to-day. Recently, Dr. H. H. Pitts,⁹ Pathologist of the Vancouver General Hospital, examined ten of my lacrimal sacs, and his report is as follows:—

Ten lacrimal sacs of varying size, from 0.6 to 1.5 c.m. in length and 0.3 to 0.6 c.m. in diameter, were sectioned and stained with hematoxylin-eosin and Unna's orcein elastic tissue stain. Grossly, there was little of particular note in these sacs; the majority appeared quite intact, but one or two were slightly ragged. In the hematoxylin-eosin sections the lining epithelium shows varying degrees of preservation; this epithelium is for the most part of a rather columnar type; no ciliation is evident in any of the sections, which may, however, be due to the old chronic inflammation which

is present in each. In some areas this epithelium is completely lost. In others it is heaped up in several layers and in some areas it is of a rather transitional, almost stratified type. In some, well defined lymphoid follicles are seen held in fairly dense fibrous stroma making up the greater bulk of the walls, but these are relatively in the minority. The great majority show more or less distortion of these follicles. Throughout all there is a diffuse and quite abundant small-round and plasma-cell infiltration, with some increase in fibrous connective tissue, it seems, increase in the number of small capillary channels, but no evidence of specificity of lesion, such as t.b.c., etc. Cross and longitudinal sections of small striated muscle fibres are seen here and there, but these are not regularly placed, and it is questionable whether they are really a part of the sac structure, as these seem rather distant from the sac wall proper. In the sections stained for elastic tissue, there is shown quite an abundance of elastic fibrils, which,



FIG. 1.—Sections through this lacrimal sac show rather hyperplastic lymphoid follicles. The lining epithelium is considerably desquamated throughout; there is a fairly rich small round plasma cell infiltration throughout the supporting slightly increased fibrous stroma; a few muscle bundles are seen in one area, and a portion of what is apparently lacrimal duct, with a rather transitional type of epithelial lining.

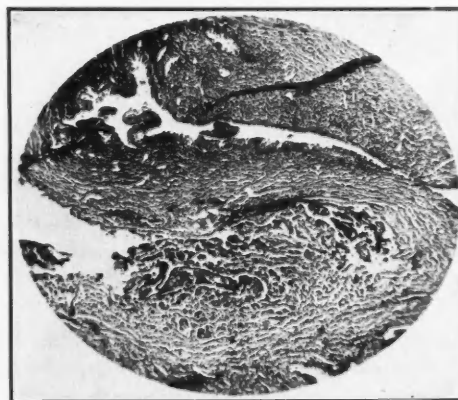


FIG. 2.—Portion of lacrimal sac wall. Here the lymphoid follicles are very poorly defined; the lining epithelium is better preserved; there are rich small round and plasma cell infiltration, some fibrosis, with here and there muscle bundles, and also sections through several ducts.

however, in these sections do not completely encircle the sac, but are fragmented to a great extent, as though having been under a tension which finally disrupted them." (See Figs. 1, 2, and 3).

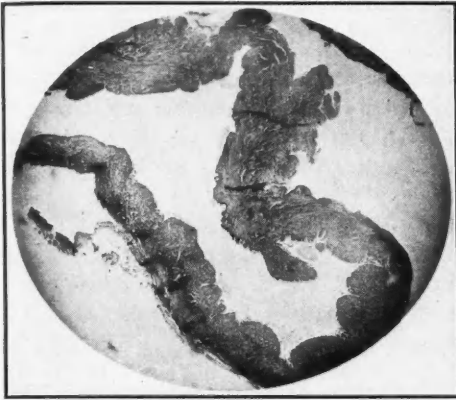


FIG. 3.—This picture is more or less similar to Fig. 2, with the exception that the epithelium is almost completely desquamated and no ducts are seen.

It has always been my belief, gained through clinical experience, aided by the pathological findings, that through these gross pathological changes, the sac ceases to function as a means of facilitating the driving on of the tears through their natural channel or any other channels. I believe that the only rational method of dealing with a lesion of this nature is to remove the sac entirely by the external route, according to the original teaching of Joseph Meller. I cannot say how many sacs I have removed, but I have been doing that work for more than twenty-five years and always under a local anæsthetic. The ages of the patients have ranged from thirteen to seventy-four years, and I do not know of any undesirable results, other than an occasional lacerimation.

Undesirable results might easily occur from an incomplete removal of the sac or inadequate curettage of the nasal duct. I pay particular attention to that. After freeing the sac and duct, which I remove with scissors as far down as possible, I then pass a probe into the nose and curette the remaining part of the duct. I believe a small incision about 12 mm. long, and in a curved direction following the natural furrows in the skin, is ample. This, in my experience, has produced no visible scar. Another very important feature is this. After suturing the wound with black silk, press the parts well down with the thumb, apply thick absorbent cotton pads and a very firm bandage.

Admitting the fact that lacerimation exists sometimes after removal of the sac it does not follow that this is always due to the absence of the sac. There are other possible factors that could account for it, *e.g.*, irritation of a toxin in the lacrimal gland (Bradburne¹⁰), refractive errors, senile conditions, from atony, which cause irritation of the conjunctiva with dust and wind, etc.

After removal of the sac it has been my practice, if there is no refractive error, to prescribe Crook's 1 plain glass in a spectacle frame for constant use, in order to protect the eye mechanically from dust, wind and glare.

When your chairman, Dr. H. M. Cunningham, so kindly invited me to be here to-day I immediately mailed a letter to some of my old patients, and invited some others living in the vicinity to come to my office. In all, I was able to communicate with about 100 cases and received from them their story of the results of this operation; altogether too small a number even to mention the subject of statistics. I must say, however, that I was much impressed with the very favourable results I had obtained. A great many told me that they had no lacerimation at all; others had lacerimation only in the wind at times. In only two cases was lacerimation present all the time. One old lady, who is now eighty years of age and a high myope, reported to me by letter. The other old lady, of about sixty-five years, I saw in my office recently, and on inspection there was no visible scar. She reported that there was never any pus. The eye was not watering at the moment. When I asked about her general health she said that she had not been at all well, suffered very much from constipation, had neuritis, and kidney trouble. I can quite well believe that if we investigated our cases more fully we would find cases giving similar stories. I feel satisfied that the lacerimation we sometimes find in these cases is not of serious moment. In any case, from my patients' point of view, in so far as it has been possible for me to determine, they have found the operation a very satisfactory one.

I recall a case of an old lady of sixty-nine years who had all the symptoms of chronic dacryocystitis, and on operation no sac was found. The usual treatment to the nasal duct by establishing a communication with the nose

through the natural channels, and curettage of the lower end of the duct, gave an uneventful recovery.

BACTERIOLOGY

Many years ago I made bacteriological studies before operation. The findings in my cases were similar to the many reported by other workers. The *B. xerosis* was sometimes found, and staphylococci, streptococci and pneumococci, not always in pure culture. In regard to post-operative bacteriological tests I must confess I have not had them done in the case of each sac removed, but would check up my findings now and then. Clinically, the eyes were clean, and I did not see the necessity as the former reports had always been negative. From the small group of cases that I interviewed lately I had the matter checked up by Dr. C. S. McKee¹¹ and the cultures were negative in twenty-four hours. The post-operative bacteriological conditions in my experience have been quite satisfactory. Dr. C. S. McKee has given me permission to mention his routine technique, which is as follows:

He takes a smear, and also makes a culture with a separate swab on Loeffler's medium and serum broth. He presses his thumb over the region of the lacrimal fossa and pulls down the lower lid, holds the sterile swab in the lower cul-de-sac for a few seconds, which act he finds produces a few tears. Loeffler's medium is inoculated first and the swab is then placed in the serum broth and left there. McKee says that smears are of value only in clinically infected eyes and remarks that the bacteriology of the eye is not entirely satisfactory, as one cannot separate the clinical from the laboratory side.

Apart from the medico-legal aspect, which we must not forget in this regard, I thoroughly believe in the importance and necessity of a bacteriological examination in all cases before a major operation on the eyeball is to be performed, and to have this has been my practice in all cases. My rule is that if a smear or culture gives a positive finding in twenty-four hours I do not operate. The occasion has never presented itself to me to operate on an eye for cataract after any operation had been performed on the lacrimal sac. If that should occur I would have the bacteriology gone into very carefully indeed, and if there was any

possible doubt at all I would first do a temporary ligation of the canaliculi, as suggested and practised by my old chief, the late Frank Buller,¹² of Montreal.

Before leaving this subject I would like to mention a very interesting work on "Lysozyme" by Ridley,¹³ which some of you may not have read yet. It is well worthy of a careful study. Lysozyme, as you all know, was described by Fleming in 1922. It is an enzyme and is said to destroy not only non-pathogenic bacteria but most of the pathogenic organisms found in man. Ridley states that it is present in high concentration in the tears, and in such concentration is destructive for many of the pathogenic bacteria found in the tears." Ridley found a marked fall in the lysozyme concentration in the tears in infections of the eye, and suggests the possibility of this throwing new light on the cause, natural means of cure, and possible treatment of bacterial infections. This, I believe, is a very interesting and instructive communication. To me, this finding may explain many of our clinical observations.

I take this opportunity of expressing my sincere thanks to Dr. C. S. McKee for his work on the bacteriology of many of my cases, and also to Dr. H. H. Pitts for his pathological work on my lacrimal sacs.

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THE TREATMENT OF DACRYOCYSTITIS FROM THE VIEWPOINT
OF THE RHINOLOGIST*

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THE operation of extirpation of the tear sac is a very satisfactory one from a surgical, that is technical, standpoint, and so is the removal of the inferior turbinate; but to-day there are very few rhinologists who will consent to remove an inferior turbinate. In both these operations, the after results are far from satisfactory. Following extirpation, from 30 to 50 per cent have epiphora. Dr. Mosher of Boston recently stated that there is tearing after excision of the sac in 30 to 50 per cent. About 90 per cent of the people who have had their inferior turbinates removed regret the operation for the rest of their lives.

I have done the usual number of extirpations that a fairly busy ophthalmologist and rhinologist does. I have not been unduly disturbed about the complaints that were made to me in regard to epiphora. I have told most of my patients that they were better off than before the operation, and that their epiphora was not dangerous to the eye. Unfortunately, or, perhaps, in the end, fortunately, I did an extirpation on a hospital superintendent. I still have the most vivid picture of her in my mind. Every morning she seemed to be waiting for me, and there she stood dabbing at her eye. Occasionally her greetings were not altogether pleasant.

I had seen Dr. West demonstrate his intranasal tear sac operation in London in 1914. It seemed somewhat risky and uncertain, and did not appeal to me at the time, but later, the persistence of epiphora in my own tear sac extirpations caused me to decide that if there was an operation that would be more certain of relieving epiphora than extirpation, I was going to master its technique.

At the Academy meeting in Minneapolis in 1922 I heard Dr. Mosher's paper on re-establishing intranasal drainage of the lacrimal sac. At that time he reported very excellent results in about twenty-five cases. Two years later, I saw him do a number of operations on the living and demonstrate his method on the cadaver. The Toti-Mosher operation is not more difficult than extirpation, and Mosher's end-results were far more satisfactory.

HISTORY OF THE OPERATION

Research shows that an attempt to re-establish an obliterated or morbid passage from the lacrimal sac to the nasal cavity was first made a very long time ago, in the age, in fact, of Galen himself: for he proposed to break through the lacrimal bone and introduce a caustic substance so as to prevent a closure of the newly formed nasal passage. The milder measures assigned to Celsus, that is, the destruction of the sac by means of a caustic, without an attempt to communicate with the nose, has been preferably followed and is employed by some to this day. Even when the anatomy of the parts came to be more carefully studied in the days of Vesalius and Fallopius, no new methods were proposed for the treatment of abscesses of the sac, and it was not until 1700 that probing and irrigation were first recognized.

In 1904, Circinione first performed on the living subject an operation which he had described and carried out successfully on the cadaver. He isolated the sac with the canaliculi, but preserved it carefully *in situ*, bored an aperture through the nasal process of the superior maxilla just anterior to the lacrimal ridge, made sure of its freedom of communication with the nose, and through the bony canal thus constructed he pushed the lower portion of the sac. In this way he was enabled to form and retain a perfectly sufficient drainage route

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for the lacrimal apparatus, and the patient was much relieved.

In 1909, in the *Ophthalmic Review* there appeared a description of Toti's operation for the treatment of dacryocystitis. This consists in cutting down to the inner side of the orbit close to the inner margin of the sac, removing the portion of the inner posterior wall of the sac, turning back the periosteum, and working one's way through the ethmoidal cells to the nasal cavity. A portion of the nasal mucous membrane at least equal to the opening in the sac is now removed. It may be necessary in some of the cases to remove part of the turbinate bone before one can be certain of obtaining a permanent and sufficient tunnel. This plan has at least the advantage that the drainage of the conjunctiva will be as nature originally intended, even if the new passage does not exactly correspond with the old situation. At the time of publishing his pamphlet Toti had carried out his plan in more than forty patients and was abundantly satisfied with the results obtained. Since then the literature has contained many modifications of Toti's operation.

In the *Journal of Ophthalmology* for October, 1928, J. J. Corbett reports the Dupey-Dutemps and Bourquet technique, which consists of direct anastomosis of the lacrimal sac with the nasal mucous membrane. In 1925, Dupey-Dutemps stated that up to that date he had done about 500 operations, with total relief from epiphora and pus in 97 per cent of all cases.

For the most part the cure and treatment of epiphora and dacryocystitis will be in the hands of the ophthalmologist. I have just reviewed several of the best known operations for re-establishing nasal drainage of the lacrimal sac. Certainly, if extirpation was as successful as some ophthalmologists infer, there would be no occasion for so much time and work being spent in perfecting a better operation.

Corbett, in his review of the Dupey-Dutemps operation, states that in tear-sac surgery of to-day there are two distinct objectives; the operation must relieve and prevent the recurrence of the infection, and it must banish for all time that ever present and most annoying concomitant disturbance, epiphora. If an operation on the lacrimal drainage apparatus

will not accomplish this twofold purpose it should not be given a place in present day ophthalmic surgery. With this I heartily agree. He also states that simple extirpation of the sac as a remedial measure in cases of chronic dacryocystitis is obsolete. As a surgical procedure it is inadequate. It removes the infection; but in a large percentage of cases it fails to correct that most troublesome feature which is of all importance to the patient, that is, the constant overflow of tears. I think he should also have stated that the operation should be simple enough to perform so that any well trained ophthalmologist or rhinologist could easily master the technique.

The operation that I have been doing for the past four years is Mosher's modification of Toti's, and it has answered all of the above requirements. In 22 cases the results were entirely satisfactory, with but two exceptions. Fourteen of the patients were operated on for chronic dacryocystitis and 8 for persistent epiphora. The ages ran from 15 to 71 years. All were done under local anaesthesia, with the exception of one case. The time consumed in the operation varied from one hour and fifteen minutes, the first one done under a general anaesthetic, to 35 minutes for one of the later ones done under local anaesthesia. The bleeding is not troublesome under local anaesthesia, especially if the lips of the wound are widely separated by a sac retractor.

Cultures.—Cultures of pus in the sac previous to operation showed a mixed infection, with the pneumococcus predominating. In a rather close follow-up, two out of 15 cases operated on for dacryocystitis report some epiphora when out in the wind, but no trouble when reading or doing housework. The ten operated on for epiphora all state that there is no excessive overflow of tears.

Scarring.—This was noticeable in only one case. I use dermal for suturing, and remove the sutures along with the external dressing on the third post-operative day. There were no post-operative fistulae. Four cases showed pus around the sutures for a few days.

Persistence of epiphora.—In some cases there was no evidence of excessive tearing on the third day, and fluorescein dropped in the eye quickly appeared in the nose; others had varying

amounts of epiphora up to 16 days. None of the cases was probed or irrigated.

Nasal Packing.—At first I allowed the packing to remain in the nose for 48 to 72 hours, but lately I have removed it at the end of 24 hours.

Intranasal Work.—The anterior ethmoids were curetted and the tip of the middle turbinate was removed in all of the cases, and a careful effort made to remove all fragments of mucous membrane. A submucous resection was done in only one case.

Previous History of the Cases.—Pus was present and easily expressed in 13. Seven had had repeated attacks of dacryocystitis and had to have abscesses incised. Two cases had fistulas present at the time of operation, one of two years' duration, and the other of three weeks' duration. The canaliculus had been slit in two cases before operation.

Condition of the Nose.—Sixteen cases were clinically negative; three showed clouding of the ethmoids on the side involved, with pus in the middle meatus; one had atrophic rhinitis; one, an infected antrum. In one case there was no record of the nasal condition. In none of my cases had an attempt been made to excise the sac. In one case there was a phlegmonous inflammation of the sac, with a hard brown infiltrated area below the eye. No pus could be expressed from the punctum; there was great pain, and one degree of temperature.

I have been taking cultures in all post-operative cases that I could get to come to my office during the past two months. In four, cultures from both conjunctival sacs were negative; in four, staphylococcus was present in both eyes. It is interesting to note that in those cases where the cultures were positive in the eye operated upon the same organism was found in the fellow eye with an apparently normal lacrimal apparatus. Pneumococcus was absent in all cultures.

OPERATION

I have followed Dr. Mosher's technique as nearly as possible in my operative procedures, except that, instead of using ether, I use injection of novocain; infiltrating along the line of the incision, and then use the same method that Dr. Sewell uses for his ethmoid operation, that is, injecting above and below the inner canthus

and following down the inner wall of the orbit, being careful not to use too much of the solution. I also pack the nose with 20 per cent cocain and adrenalin. I have found it unnecessary to put in a post nasal pack because of the small amount of bleeding.

First Step.—The lid of the eye involved, the eye brow, and the upper part of the nose are cleansed in the usual manner. The lids are held together and the cornea protected from accidental trauma by keeping the lids closed with strips of sterile adhesive pasted from the upper to the lower lid. If there is an obstructing deviation of the septum higher up it is better to resect this portion of the septum as a part of the first step of the operation, or to do it before the tear sac operation is undertaken. The anterior tip of the middle turbinate may be removed under cocain a few days before the operation on the sac, or as a first step of the operation.

Second Step.—The second step of the operation is the exposure of the lacrimal sac, freeing it from its bed and turning it and the adjacent soft tissues outward. The sac is approached through an incision over the ascending process of the superior maxilla. The incision is made about 10 mm. from the inner canthus of the eye. It starts at the level of the crease in the upper eyelid which marks the upper limit of the cartilage of the lid, and runs down in a nearly straight line and parallel with the posterior edge of the ascending process of the superior maxilla, where this makes the anterior boundary of the bed of the sac. The incision is stopped 2 or 3 mm. below the inner limit of the lower rim of the orbit. The whole length of the skin incision is outlined first. Then the knife is carried through the soft tissues and the periosteum to the bone. In freeing the sac from its bed and in elevating the periosteum from the inner wall of the orbit, a flat chisel, about a quarter of an inch wide, is employed. It acts both as a sharp and blunt elevator. At times it is necessary to supplement this by the knife, especially about the anterior edge of the bed of the sac. The sac shells out of its bed most easily if it is approached from above. Accordingly, the elevation of the periosteum of the inner wall of the orbit is begun just above the sac, and then carried downward until the sac is thoroughly out of its bed and the beginning of the nasal

duct is clearly seen. As the sac is being freed from its bed, the elevation of the periosteum of the inner wall of the orbit is carried back a little, that is, for 2 or 3 mm. beyond the crest of the lacrimal bone. By working in the manner outlined it has so far been easy in all cases to define the limits of the sac, regardless of the presence of fistula and of previous attempts at excision.

If the sac does not present clearly, a slight enlargement of the incision upward readily brings it fully into view. If, however, the incision is carried upward to any great extent it will be found, when one comes to suturing the wound, that a dead space has been created in the soft tissues at the upper end of the incision which requires a buried suture to obliterate it. In some of the earlier cases a non-draining pocket was formed, which made it necessary to open the upper part of the incision.

Third Step.—The third step in the operation is to make a bony opening into the nose which at least equals the height and width of the sac, unless the sac is excessively dilated. The bony opening, however, must be made large enough to receive easily the outer wall of the sac after the inner half or two-thirds have been cut away.

The initial opening into the nose is made by breaking down the lacrimal bone in front of the crest. This is readily accomplished by the end of a small punch. A sufficient opening is made in the lacrimal bone to permit the introduction of the smallest Kerrison punch, or any similar instrument, such as that of Citelli. With this the rest of the lacrimal bone in front of the crest is bitten away, and then the posterior edge of the ascending process of the superior maxilla, where this makes the anterior half of the bed of the sac, is removed. As was said above, the bony opening into the nose must at least equal the height and width of the sac. This accomplished, the inner bony wall of the nasal duct is bitten away with a small punch (Lang's) to the level of the upper rim of the inferior turbinate.

Fourth Step.—The fourth step of the operation consists in the removal of the inner half of the wall of the sac, or, if the sac is greatly dilated, of the inner two-thirds. In addition, the inner wall of the nasal duct is removed. The removal of the inner half of the wall of

the sac is accomplished with forceps and scissors; the removal of the inner wall of the nasal duct, with a small punch. It is essential, of course, to leave the outer half of the sac, because in this, at the level of the inner canthus, the common opening of the canaliculi is placed. In distended sacs this opening is never endangered, but care must be taken in cases where the sac is small. The mucous membrane of the nose is sacrificed where it presents in the bone opening and trimmed flush with the margin. The region of the nose opposite the bone opening, and into which from now on the sac is to drain, is made free from tags of the middle turbinate and overlapping ethmoid cells. This is done in order that the granulations which occur during the healing process may not obliterate the new opening, in case this is surrounded by granulations caused by the suppuration in the sac. After replacing the soft tissues the skin is sutured and no attention is paid to the underlying periosteum.

The operation is completed by freeing the nose of clots. I always suture the entire incision with dermal regardless of the amount of pus in the sac. Pressure is produced upon the incision and the soft parts below by a trunecated dressing, over which a pressure bandage is applied.

After Treatment.—The pressure bandage is kept on for three days, being removed temporarily for washing the eye with boric solution.

Dr. Mosher has modified Toti's technique by making the skin incision straight and 10 mm. from the inner canthus. The first opening is made through the lacrimal bone, not through the thick bone of the superior maxilla. Toti goes to great pains to save this mucous membrane intact, before he makes the opening through it. This Dr. Mosher disregards, resecting it along with the bone. Toti does not remove the wall of the inner duct, and in Mosher's operation this is removed down to the upper rim of the inferior turbinate. Toti occasionally removed the tip of the turbinate; Mosher does it in all cases. He feels that it is most important to get a maximum amount of space in the anterior part of the meatus.

Contra-indication.—So far as I know there is only one contra-indication to the Toti-Mosher operation, which by the way applies equally to extirpation, that is, where there is stenosis of

the common duct of the canaliculi at its entrance into the sac. The patency should be determined either by passing a lacrimal probe or by the use of lipiodol diluted with equal parts of olive oil, and obtaining a radiogram.

CONCLUSIONS

In reviewing the results obtained by extirpation of the sac, it is evident that there has been considerable dissatisfaction caused by the high percentage of cases in which epiphora persists. With the Toti-Mosher operation the percentage of epiphora is much reduced. Quot-

ing again from Dr. Mosher, there is tearing after excision of sac in 30 to 50 per cent of cases; tearing after Toti-Mosher operation in 10 to 15 per cent. At our infirmary the ophthalmologists rarely excise a tear sac now.

The post-operative cultures that I took were all negative for pneumococcus, which previous to operation had shown a preponderance of this organism. The conjunctiva is free from infection in a very short time, and operations on the globe could be done as quickly and as safely as in extirpation.

THE COURSE, PROGNOSIS, AND TREATMENT OF CHRONIC DIFFUSE NEPHRITIS IN CHILDREN*

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CHRONIC diffuse nephritis is a progressive renal disease with protean clinical manifestations, but a common pathological picture when the disease has run its course. Should death supervene from some other cause or an acute exacerbation of the disease itself before this end stage is reached, the kidney may vary greatly in its gross appearance and in its histopathology, in accordance with the stage of chronicity and the clinical type of the disease from which the patient suffered. Typically, the end result is a small kidney whose capsule strips with difficulty and in which the microscope reveals diffuse injury to every structure of the organ. Glomerular and interstitial tissue present evidence of inflammation, acute and chronic, while the tubules usually show secondary changes of a degenerative character. The blood vessels, both renal and extrarenal, show varying degrees of sclerosis.

The disease is by no means so rare in childhood as the literature or a casual acquaintance with juvenile nephritis would lead one to suspect. A closer study of the past history of some supposedly acute cases would often reveal

their true nature as acute exacerbations of a chronic process, and more frequent urinalyses, just as in adults, would allow an early diagnosis in these almost symptomless cases, and possibly permit the timely institution of remedial treatment.

FORMS

Two main clinical types of the disease are seen in childhood: (1) those in which symptoms or signs, or both, follow an acute nephritis; (2) those in which no suggestive symptoms of sufficient severity occur to direct attention to the kidney until chronic changes have already taken place, and in some secondary arteriosclerosis is present.

First, let us consider those cases which follow an initial acute attack of nephritis. The most likely of the acute cases to become chronic are those in which hæmaturia and œdema are both present, indicating a diffuse renal lesion. The simple initial hæmaturic or hydræmic cases may become chronic, and, when they do, they show at some stage in their course both hæmaturia and œdema. It is almost impossible to set a time limit beyond which the acute inflammatory process has passed over into a chronic one. Usually, however, when symptoms or signs persist longer than two months, or recur after a temporary cessation, chronicity has become

* From the Laboratories of the Sub-Department of Pædiatrics, University of Toronto, and from the wards of the Hospital for Sick Children, Toronto, under the direction of Alan Brown, M.B. Read before the meeting of the Canadian Society for the Study of Diseases of Children at Hamilton, May 27, 1929.

established. Recovery from all symptoms may yet ensue, but signs such as the persistency of the proteinuria and the presence of small numbers of casts or blood cells indicate the presence of scars. Such cases, properly treated, may live years with little further evidence of a renal lesion. In the less fortunate, symptoms as well as signs remain and their disease runs a subacute course for months or even years. Hematuria recurs frequently, and oedema persists and is often severe enough to lead to the erroneous diagnosis of nephrosis. More or less gradually, time being a relatively unimportant factor, the renal function becomes progressively worse; sclerotic changes develop in the blood vessels, and death finally occurs, either as a result of uræmia or an acute infection. These cases furnish interesting material for the study of renal function. As they progress, they pass through the stage in which the greatly enlarged kidney is easily palpated to that in which the organ is felt with difficulty, or not at all. Cardiac hypertrophy develops slowly. "Pipe stem" radial arteries, at first due to spasm but later to sclerosis, are felt in many. About the time cardiac hypertrophy appears polyuria and nycturia are complained of, although their presence can usually be detected earlier by laboratory methods. Changes in the eye grounds are usually late and produce little complaint of visual disturbance until well marked. In the majority, it takes two to four years for these changes to take place. When the initial damage to the kidney occurs early in life, and is progressive in nature, stunted growth results.

The consideration of the second clinical type shows it to consist of two groups of cases. First, there are those in which the disease runs a benign course, with little downward progress for years. Indeed, many of them pass from the care of the pædiatrist before any functional impairment of the kidney is demonstrable. The other group is composed of those in whom advice is first sought for alleviation of the symptoms of the end stage of nephritis, such as uræmia, headaches, blurred vision or blindness, and in whom general arteriosclerosis is found to be present. The difference in the two groups is probably only in the rapidity of the course the disease process runs. In both, vague symptoms of ill health and recurrent

infections have been present for years. In the more benign type, enuresis or nycturia frequently dates from an attack of measles or scarlet fever. Urinalysis shows the presence of albumin and a small number of casts. Functional studies reveal some slight degree of renal impairment. The blood pressure may be raised a little. At times, these patients develop general anasarca after a few months of poor general health, and, because of the mildness of their preceding symptoms, the oedema is regarded as an initial symptom, and too optimistic a prognosis is given. In the arteriosclerotic cases, secondary anæmia and easy fatigability usually precede the nephritic symptoms for some months. The progress downhill is rapid in this type and death usually occurs within a few months. Infective foci are always found, whether they have previously produced symptoms or not.

PROGNOSIS

The prognosis in chronic nephritis can be made fairly well if close attention be paid to the clinical history, signs and symptoms. Greater precision is added when laboratory tests are available.

If due attention is given the history of the illness, one will not be likely to regard an acute exacerbation of a chronic process as an initial acute infection, and, therefore, will not give a better prognosis than is warranted. Repeated exacerbations, whether characterized by hematuria or oedema, or both, always indicate a progressive lesion and, as each one leaves its scars, make the outlook worse. The persistence of a slight rise of the systolic blood pressure, or its gradual increase, are significant of increasingly grave functional incapacity of the kidney. Cardiac hypertrophy does not occur until rather late in the disease, and its presence therefore precludes the possibility of a complete recovery from symptoms. The development of definite arteriosclerosis is of graver omen as death usually follows within a few months.

The concentrating power of the kidney is readily determined and gives most valuable information as to prognosis. Some degree of fixation of specific gravity, or inability to concentrate the night urine normally, is usually present early. When the variation in the day is less than five points, and the specific gravity of

the night urine is constantly below 1020, a severe functional incapacity of the kidney is present, and in consequence some degree of azotæmia is associated. The estimation of the blood creatinin gives reliable data. Values between 3 and 5 mgm. per 100 c.c. indicate a degree of damage beyond the possibility of complete recovery, but not necessarily any immediate danger; values in excess of 5 mgm. per 100 c.c. usually indicate death within a few months.

Aside from the terminal cases in which nothing of any avail can be done, the facility with which foci of infection can be removed is an important factor to consider when making a prognosis. Life may be prolonged indefinitely in the benign cases, and the rapidity of the progress of the disease arrested in the others if complete eradication of all infective foci is possible. Every exacerbation of the disease adds further scars and decreases the functional capacity of the kidney. Such attacks are nearly always initiated by infection.

TREATMENT

The treatment of chronic nephritis is symptomatic, except for the measures directed towards prevention. These consist largely in the complete removal of all foci of infection, preferably before the development of any nephritic symptoms, or as early as possible thereafter, and adequate rest after all acute symptoms, whether of an initial attack or an exacerbation of a chronic one. A nephritic patient with no infectious foci is rare indeed. Seldom is one seen in whom the history does not record repeated infections. Considerable has been said, and rightly so, about the removal of tonsils and adenoids in these patients. More attention must be paid to diseased teeth and unhealthy accessory sinuses. The diagnosis and treatment of sinusitis in children is beset with difficulty, but the results obtained would seemingly justify the labour. In five of eight such patients recently studied from this point of view, definite disease of both antra and ethmoids was found, and in three amelioration of symptoms and some arrest in the progress of their disease was the result of adequate treatment. Surprisingly large abscesses, often harbouring hæmolytic streptococci, are to be found, even in primary teeth which are in a not too obvious state of neglect. It is easily seen why the removal of tonsils has not

always produced the expected results if a few of these apical abscesses are left. When possible, the teeth should be treated first and the tonsils removed later. Subsequently, the more difficult treatment of the sinuses must be completed. Radical treatment of the latter may be deferred until conservative methods have been given a fair trial and been proved inadequate.

Absolute rest in bed is essential during all exacerbations or acute attacks. This should be sufficiently prolonged to allow all symptoms and signs to subside, whether this takes weeks or months. The symptoms usually clear up first and make it hard to maintain the rest needed. A relapse occurs readily if a too early convalescence is allowed, and may prove the determining factor in determining the future course of the disease.

Dietetic therapy has always occupied a conspicuous place in the treatment of nephritis. A suitable diet should be constituted so as to give the most adequate rest to the kidney it is possible to maintain; secondly, the secondary anæmia invariably present should be combated; and, thirdly, adequate nourishment should be provided. Fortunately, these requirements are not impossible to meet. Fruits and green vegetables are to be recommended for the treatment of anæmia, and when consumed in large amounts probably exert some protective effect on the kidney itself. They further produce a bland (basic) urine, and add the possibility of variation in the diet. Proteins should be restricted only by prohibition of their excessive use. No evidence is forthcoming that the use of adequate protein, 40 to 60 grams daily, in children is harmful, except during an acute attack. Because of their relative restriction, a large proportion of that used should consist of animal protein so that no deficiency will occur. Salt should be restricted because of its irritative effect on the kidney and its possible relationship to hypertension and œdema. When dropsy is present absolute restriction is advisable. At other times prohibition of the addition of any salt to the food is sufficient. The intake of cereals and bread stuffs must be limited to a minimum, because of their salt content if made palatable, their acid producing qualities, and because they furnish no essential nutritional element. Milk may be used freely, except when the total fluid

intake allowed is too small to permit its use in any large quantity.

The rest of the treatment is symptomatic and can best be outlined under the particular symptoms concerned.

Edema is often of a troublesome and persistent nature. Rest in bed is indicated. The fluid intake must be restricted to the smallest amounts compatible with the comfort of the patient. The food should be salt free. An exclusive milk diet for a few days is often beneficial, particularly if hematuria is also present. Extrarenal channels of excretion, such as the bowel, should be used. For this purpose saline cathartics prove most effectual. Diuretics, such as ammonium chloride or calcium chloride in doses of 1 to 3 grams daily are often distinctly beneficial. If cardiac weakness is also present, their action is enhanced by using digitalis in addition. Repeated paracentesis of the abdomen under the most rigid aseptic precautions will often lead to disappearance of the dropsy when other measures have failed.

Uræmic symptoms occur frequently in chronic nephritis, either during acute exacerbations or as a terminal event. They may be due to either cerebral oedema or nitrogen retention, and it is often difficult to say which by clinical means alone. Further, even when azotæmia is known to be present, the acute symptoms may still be due to cerebral oedema. For this reason, and because we possess no specific therapy for true uræmia, it is well in every case to attempt to rid the brain of excessive fluid. The results, of course, are more striking when the oedema

has been the chief factor, but amelioration of symptoms often results even in cases of true uræmia. Two methods are in vogue to accomplish this purpose. In both, the bowel is used as an adjunct and sufficient 50 per cent solution of magnesium sulphate is given by mouth and by rectum to obtain free fluid evacuations. Both likewise attempt to produce diuresis by the liberal use of ammonium chloride per os. In one, the most desirable, when feasible, a 1 per cent solution of magnesium sulphate is given intravenously. Such administration must for safety's sake be slow, not more than 1 to 2 c.c. per minute being injected, and is therefore time consuming. The total amount injected must not exceed 10 c.c. per kilo of body weight, and the operation must be stopped at once should any irregularity of pulse or respiration be produced. The symptoms due to cerebral oedema usually disappear after a transitory rise and in most cases do not recur. In a few, however, the injection must be repeated in twelve hours. The second method is the slow withdrawal of cerebrospinal fluid. There is some danger of cerebral impaction if care is not exercised during this procedure. The use of a small bore needle minimizes the danger, and makes it the simpler and often the only possible method to use. Heroic measures, such as an exsanguination transfusion, have proved successful in a few cases, but should not be resorted to unless other measures have failed and it is felt that renal function is still sufficiently good that the symptoms are not terminal.

FACTORS AND CAUSES OF MATERNAL MORTALITY.—R. W. Holmes, Chicago; R. D. Mussey, Rochester, Minn., and F. L. Adair, analyze the maternal mortality rates from all causes and from puerperal septicæmia for the United States and certain foreign countries per 10,000 live births during a period of years, as well as other available data. It is evident that the maternal mortality rate of the United States is not one of which we can be proud. There are certain problems, not insurmountable, which confront physicians for solution before this rate can be reduced materially. The most important factor is the provision of suitable institutions and of a well trained personnel to provide proper care for mothers during pregnancy, labour and the puerperium. The question of physician, midwife or

nurse is not so essential as the character and training of the individual attendants. It does not especially matter whether obstetric care is urban or rural, at home or in the hospital, as good care can be provided under all these conditions. It is still necessary to educate laymen to the dangers of abortions, toxæmias and infections, and they must further realize the importance of good care during pregnancy, labour and the puerperium. It is also necessary for those now practicing obstetrics to give a good account of the "talent" entrusted to them. It is most important to make proper and adequate provision for the necessary and suitable training of those who are to practice obstetrics in the future.—*J. Am. M. Ass.* 93: 1440, Nov. 9, 1929.

THE ROENTGENOGRAPHIC STUDY OF THE GASTRIC MUCOUS MEMBRANE*

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FOR many years there has existed a tendency to look upon the stomach merely as a reservoir for food, where the proteins underwent initial digestion, and to ignore all conditions except those causing gross defects. Recent investigators, however, have shown that the stomach carries out many other functions of importance. If we add to its ordinary digestive function the influence of its activity on the acid-base equilibrium of the blood and chlorine metabolism, it becomes clear that the stomach is an extremely essential organ. (Babkin¹.) Hence the need for finer distinctions in gastric studies.

In order to appreciate the importance of the gastric mucosa it is necessary to review some of the recent developments in the physiology and anatomy of this structure.

Forssell², in 1912 and 1913, was the first to study the mucosa by means of the x-ray. The importance of his work can hardly be overestimated, for it has completely changed all the ideas previously held by physiologists and anatomists regarding the function of the mucous membrane. The old idea was that the folds of the mucous membrane were caused by a passive folding in, as a contraction of the muscular coat. Forssell has proved that this view is not correct, but that the folds of the mucous membrane are formed by active movements of the mucous membrane itself by means of the muscularis mucosae.

The muscularis mucosae forms the special contractile organ of the mucous membrane and is able to displace it in all directions by means of its transverse, longitudinal, and oblique fibres. The movements of the muscularis propria determine the rough division and the large displacement of the contents of the stomach.

The movements of the mucous membrane produce an extremely differentiated distribution and restraining of the food in digestive chambers of varying form and size. The multitudinous

folds and furrows become alive, as the result of independent motor forces which may be of great importance for the mechanical regulation of digestion, constituting a wonderful organization for the regulation of the chemistry of digestion. These views have been confirmed by various physiologists notably Thorell³, King and Arnold⁴.

Thorell, by separating the mucous membrane and the muscularis mucosae from the muscularis propria, was able to record graphically the capacity of the mucous membrane for reacting to different means of irritation. It is remarkable what a long life the mucous membrane possesses after being separated. In a few cases the reaction capacity was retained for several hours. The great activity which the muscularis mucosae can show throws a fresh light on the importance of this part of the stomach in the preparation of food. The adoption of these newer physiological principles opens up a very wide field for the investigator. It would appear reasonable to assume that, in most pathological conditions of the stomach, such a delicate mechanism as has been described would be the first to show a variation from the normal.

The descriptions and illustrations of the gastric mucosa found in anatomical works are usually taken from the cadaver. In the living, the folds and rugae run in all directions, the impression given as to form being such as searching among a mass of earth worms or boiled spaghetti. (Jackson⁵.)

The mucous membrane of the posterior and anterior walls of the stomach shows a relief which is quite different on each aspect. On the posterior surface there are high folds with close transverse folds, which arise in the cardia and extend downwards towards the pylorus parallel to the axis of the stomach. Frequently, near the greater curvature there is seen a fragmentation of the rugae. The anterior surface shows only a small number of low folds.

There is a wide variation in different individuals, and according to the tone of the stomach. When the tone is increased the folds

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are thrown closer together, and become more prominent. On the other hand, an atonic condition makes the folds less conspicuous. A conception of the various forms of the normal mucosa is, of course, essential to the appreciation of abnormal changes. What then may be gained from such intimate studies of the stomach?

In order to satisfactorily examine the mucous membrane a special process must be used. We have all seen how well the rugae are defined when a small quantity of a barium mixture is given, particularly in an atonic stomach, and we recall Carman's⁶ palpatory method for defining the rugae on the posterior surface, but for prolonged studies of the mucosa this method is not practical. It is necessary to use a viscid, tenacious vehicle which will slowly flow over the rugae when the patient is in a semi-recumbent position. After experimenting with many mixtures, I have come to the conclusion that three parts of mucilage to two of barium is the most satisfactory. A small quantity of this mixture, one to two teaspoonfuls, is given with the patient in the recumbent position. The head of the table is then raised through about 15° or to a sufficient angle to cause the barium to reach the pylorus in a reasonable time. If too much elevation is used the mixture will simply fall to the most dependent portion of the stomach without coating the rugae. Palpation should be avoided, as this will distort the folds. Gas in the splenic flexure and an unusual amount of gastric secretion are difficulties which can be avoided by proper preparation.

I may say that two methods are useful for the close study of the mucosa: first, the taking of films after the barium has spread itself over the surface of the stomach; and, secondly, fluoroscopic observation. By the latter method movements of the rugae can be seen.

I have noticed, besides changes in the conformation of the folds, retrograde movements of the barium without any change in the configuration of the longitudinal folds, as well as a pooling of the barium in small masses; these masses suddenly break up, and the barium is dissipated in all directions, only to again return to its original mass, as though the mucosa had formed a small chamber into which a portion of the meal was held. These phenomena are most frequently seen in the cardiac region, which, as we know, is physiologically the most important part of the stomach.

I first became interested in this subject in an attempt to discover the cause for gastric

haemorrhage, in cases in which no gross defects were manifested by our ordinary methods of examination. I believe these cases are almost invariably due to the condition known as achlorhydria gastrica haemorrhagica, so well described by Pilcher⁷ of the Mayo Clinic. In this disease the principal anatomical change is the presence of numerous erosions of the mucous membrane; in addition gastric analysis reveals the absence of hydrochloric acid and often the presence of blood. If this condition is caused by toxins from any focus of infection circulating in the blood, according to the work of Rosenau⁸ it must occur with considerable frequency. I believe that these erosions can be detected by a close study of the mucosa.

In many cases presenting the clinical features of the above mentioned condition it is frequently observed that the barium collects in numerous node-like areas, and that the rugae in the vicinity of these nodes are distorted, and lack elasticity when observed under the fluoroscope. In chronic inflammation of the stomach, interstitial or hypertrophic gastritis, with cellular infiltration of the mucosa, the rugae are enlarged, irregular and no movements are seen. In atrophic gastritis, or extreme atrophy of the stomach, the rugae are seen as finely pencilled lines, with few or no cross divisions, and a complete absence of movements.

Hayem⁹ states that the so-called functional conditions of the stomach have their basis most often in definite mucosal alteration, not recognizable by x-ray examination or by the surgeon on the operating table. It is my belief that pathological changes in the gastric mucosa may affect the process of the gastric secretion, and it is possible and highly probable that changes may occur in the mucosa before gastric secretion is involved.

A mere infiltration of the mucous membrane may exist in a circumscribed portion of the gastric wall, and produce little effect on the gastric secretion¹⁰.

In addition to the detection of inflammatory states of the mucosa, such studies are helpful in the investigation of other problems¹¹, such as,—

1. The exposing of ulceration on the posterior wall.
2. A more detailed study of cancer. Ewing¹² states, "that while cancer is associated with a generalized gastritis, a relatively intact mucosa persists in cancer following ulcer."
3. The differentiation of extra-gastric pressure from intrinsic defects.

4. The differentiation of spasm from organic lesions.

I trust that these remarks, which, so far as the practical application is concerned, merely represent a preliminary and inconclusive study of the subject, will serve to stimulate further interest in what I believe to be a fruitful field for the roentgenologist.

It will, I think, be admitted by those interested in the physiology of the stomach that the studies I have described permit of many fascinating applications. For instance it may be possible to detect the reaction of the mucosa to various chemical substances.

When one considers the innumerable cases which are referred to roentgenologists because of gastric symptoms, and in which no evidence of gastric lesions is found, one must ask whether in all these cases the symptoms are reflexly produced,

or whether, in common with other organs, the stomach is not frequently affected with chronic inflammatory conditions often overlooked.

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PYURIA IN CHILDHOOD*

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FOR the purposes of this discussion, pyuria in childhood may be considered under two categories: firstly, the acute disease, characterized by fever, prostration, pallor and the presence of large quantities of pus in the urine (occurring practically always in children of the "diaper age"), and frequently, but not necessarily, associated with disease of some other organ; secondly, the more chronic disease, characterized by remittent fever, occasionally chills, prostration, and large quantities of pus in the urine, which occurs usually in older children, and is commonly associated, as we shall show, with some organic pathological condition of the genito-urinary tract.

The relatively low mortality rate of pyelitis has made the study of the site of infection difficult, until recent times. With the improvement in cystoscopes, ureteral catheterization of infants became possible, and it has been shown by Hinman, Kretschmer, Helmholtz and others, (quoted by Abt¹), that in cases of pyuria there is usually an inflammation of one or both kidney

pelves. With the exception of the common colds and gastro-intestinal disturbances of infancy, pyelitis is one of the commonest diseases of childhood. It has been estimated that it comprises about one per cent of all cases seen by paediatrists. It has been termed a disease of the "diaper age," for beyond the second year it decreases rapidly in frequency. In older children it is usually a more serious disease, though less common. Most authorities state that the common colon bacillus pyelitis of the diaper age is more common in girls than in boys.

Various modes of infection are described as: (1) *hæmatogenous*; virulent organisms are carried to the kidney by the blood stream, excreted into the pelvis, and there set up infection. This is probably not the chief cause of the ordinary pyelitis of infancy, of which we are now speaking. (2) An *ascending infection*, which is more likely, because of the frequency with which pyelitis occurs in girls, due to the short patent urethra, the incompetency of the ureteral valves in the bladder, and the fact that bacteria can enter the blood stream from the infected pelvis.

* Paper read at the annual meeting of the Ontario Medical Association, Hamilton, May, 1929.

The evidence thus far presented indicates that pyelitis may be caused either by the ascending or the hæmatogenous route. It is still inadvisable to attempt to decide definitely which is the more likely mode of infection.

Histologically, Helmholtz, as quoted by Abt,¹ pointed out certain differences distinguishing the experimental ascending pyelitis of rabbits from the hæmatogenous form. The latter was characterized by cortical and medullary abscesses and subepithelial infiltration, particularly of the papillæ; the parietal portion of the pelvis was not inflamed. The ascending form, in a number of instances, revealed marked periureteral infiltration, marked purulent infiltration around the proximal end of the ureter, with extensions into the peri-pelvic fat.

Very little is known concerning the morbid anatomy of simple pyelitis. At present, the findings vary from almost complete destruction of the kidney to a normal appearance at necropsy. In cases of simple pyelitis, in which the patient dies from some other cause, the renal pelvis may show no demonstrable changes, or only a few small ecchymoses. The kidneys of patients dying from urinary infection by way of the blood stream, however, may show very marked changes, abscesses throughout the cortex, and purulent streaks radiating upward from the papilla. In acute cases there may be tremendous swelling of the kidney, degeneration, and necrosis. Histologically, simple pyelitis is characterized by the very slight changes in the lining of the pelvis. In more chronic cases there may be a very definite increase in the subepithelial connective tissue, lymphocytic infiltration, and a change from stratified squamous cells to a single layer of epithelium.

The most recent work on the pathology of pyelitis in infancy has been reported by Chown,² who confines his discussion to the disease as it occurs in infants of two years or less. He states that, histologically, Escherich is generally given credit for having first introduced the concept of pyuria as a clinical entity into pædiatrics. Escherich described in 1895 several cases of pyuria in female children, which he concluded were cases of cystitis. The following year, Finklestein, of Berlin, reported eight autopsies on infants without microscopic examination, and made the deduction that the lesion present was a primary pyelitis. During the next ten

years controversy raged, without proof on either side, as to whether this was a primary inflammation of the pelvis or a primary pyelonephritis. Some autopsies were reported showing suppurative lesions in the kidneys and catarrhal changes in the pelves, ureters and bladder, with inflammation of the submucosa, from which colon bacilli were cultured. Until 1918 many cases of pyuria were reported with autopsies, but without giving any proof that the pelvis was primarily infected. In some no pathological lesions were found to account for the pyuria. Chown concludes, from a review of the literature, that we have complete information in only nine cases of pyelitis in infants of two years or less, eight of whom showed a suppurative nephritis with insignificant lesions elsewhere in the urinary tract.

Chown presents evidence covering thirty cases followed to autopsy, which he divides into three groups. The first group contains those that may be classed as acute or subacute. The striking features here are: the uniform finding of multiple, focal, suppurative lesions in the kidneys; the infrequency of any but the slightest pathological changes in the pelves, and their rarity in ureters and bladder; the recovery of bacilli of the colon group in all cases where cultures were made; the association with the infection elsewhere; the equal distribution between the two sexes; and the frequency of bilateral involvement, but with a tendency to more severe lesions on the right side. The second group shows four cases in which no lesions were found as a source of the pyuria. The third group contains cases with chronic pyuria. These are perhaps the most interesting and instructive of all. Here, with chronic pyuria and bacilluria, accompanied by persistent marked symptoms or by a very slight general reaction, the pelves again show no source for the pus, while the kidneys are always involved and exhibit both acute, multiple, focal, suppurative lesions and inflammatory lesions in various stages of healing. Chown believes that the current conception of pyelitis is erroneous, leading to error in diagnosis, treatment, and investigation. All the evidence available points to the kidney proper as the usual seat of the lesion in cases of pyuria in infancy.

More work is necessary to settle the question, but so far, according to Chown, it would ap-

pear that the common lesion in pyuria in infancy is a suppurative interstitial nephritis with secondary involvement of the parenchyma. The infecting organisms, having gained a foothold in the interstitial tissue, produce an acute inflammatory lesion characterized by œdema, with degeneration of the neighbouring parenchymatous tissue, with varying degrees of necrosis, and an outpouring of polymorphonuclear and mononuclear cells, which escape into the tubules, drain into the pelvis and appear in the urine. The pelvis, however, is evidently very resistant to infection. The gross appearance of the kidney in this disease varies according to the stage of the disease at which the patient dies. In the earliest cases the kidney, both externally and on section, may appear normal and slightly congested; the pelvis is normal. At a later stage the kidney is found swollen and congested. The degree of swelling is extremely variable, and may be scarcely noticeable, certainly not clinically appreciable. The outer surface usually shows many small, greyish white or yellowish white, flat or slightly depressed areas surrounded by a zone of hæmorrhage. The cut surface bears similar lesions both in the cortex and in the medulla, with some linear ones stretching through the pyramids. The pelvis is usually normal, though sometimes it has appeared congested or the seat of petechiæ. In the next stage abscesses are found in the substance and on the surface. Finally, in the chronic cases, there is a somewhat swollen kidney with a slightly adherent capsule, and with necrotic or suppurative foci, as in the previous cases. There are certain cases which run their course without foci becoming visible to the naked eye. In these the kidney is usually swollen, soft and congested, and on section the surface is greyish and slimy.

Chown does not believe that the disease affects almost exclusively female babies. Sex must be considered as a probable etiological factor, since it affords an additional route of infection in girls. However, the pathological picture presented in both sexes is usually a definitely interstitial one, suggesting a blood stream infection. In the absence of positive proof it seems reasonable to believe that the route is by way of the blood stream in boys and in a similar number of cases in girls. In

the remaining bilateral cases in girls the assumption of an ascending infection appears justifiable, and some cases of pure cystitis probably originate this way.

A second apparent etiological factor is that of the presence of infection elsewhere, producing secondary cases. This has been repeatedly observed. Studying the seasonal incidence of all cases occurring in hospital, it was found that there were two distinct maxima, one in February and March and a much higher one in August and September. These correspond with the periods of respiratory infection and intestinal disturbances. Numerous observers have noted the frequency of relapses in pyelitis. This, no doubt, is due in large measure to the fact that the clinical symptoms disappear very much earlier than does the inflammatory condition of the urinary tract, and a sudden rise in temperature in a patient who has been free from fever and other symptoms for some time is usually considered a relapse, when in reality it is merely a return of symptoms. Before pronouncing recovery in cases of pyelitis it is necessary that at least two sterile cultures be taken at intervals of several days.

The clinical picture of pyelitis in infancy differs so much from the picture in the older child that it seems best to discuss their symptoms separately. The disease in the infant, whether severe or mild, is characterized by the absence of any signs localizing the condition in the urinary tract. Bladder symptoms are infrequent. However, so well established is the clinical entity of high fever, pallor and restlessness, without other findings in the routine physical examination, that a diagnosis of pyelitis is often made before the urine has been examined. The fever is usually remittent in type, chills may occur, gastro-intestinal disturbances and nervous manifestations are common. The general opinion is, however, that there is definitely a group of secondary as well as primary cases. The primary group is typified by the well developed breast fed infant who is taken suddenly ill with an infection of the urinary tract; the cases in the secondary group follow in the wake of infections of the upper respiratory tract and disturbances of the gastro-intestinal system. The first group is often overlooked, because the secondary gastro-intestinal disturbances are held accountable for the febrile

attack. The secondary group is more often overlooked because the urine is normal when examined at the onset of the acute illness and is not re-examined when the complicating pyelitis sets in.

Pyelitis in the newborn infant, a not uncommon infection causing fever in infants during the first two weeks of life, is not within the scope of this paper.

The course of pyelitis in patients with normal urinary tracts is usually favourable. The acute symptoms may be very severe, but it is extremely rare that infants die from simple acute pyelitis, though they may die from a complicating nephritis. As a rule, the acute general symptoms, fever, restlessness and anorexia, persist from ten days to two weeks; in severe cases, from three to four weeks. The most important feature in treatment is the washing out of the urinary passages. The process of flushing is limited only by the amount of fluid the child or infant can take. An attempt should be made to give an infant at least one quart of fluid in each twenty-four hours in addition to its food. Fluids may be given by rectum if not retained by mouth, by means of the Murphy drip, or even intraperitoneally or subcutaneously in the form of saline solutions. Besides the use of water, the alkaline treatment has given the best results in acute cases. As a routine procedure sodium bicarbonate and sodium citrate, 10 grains of each, may be given every four hours to infants under six months of age; for infants over six months of age, double the amount is used in the same manner. Usually when alkalization of the urine is effected the temperature drops to normal, though a sufficient degree of alkalinity of the urine cannot be produced to inhibit the growth of the colon bacilli. It is probable that whatever beneficial effect the alkali produces, besides diuresis, is by a direct action on the tissues rather than on the bacteria. Undoubtedly, the alkali treatment hastens symptomatic improvement. Helmholtz states that urotropin may be given to infants more than six months of age, in doses of 10 grains, four times a day, with good results in clearing up chronic cases. Local treatment has been effective when applied to the kidney pelvis by ureteral catheterization in chronic cases. In most cases pyelitis has been uninfluenced by

the use of vaccines made from cultures of the patient's urine. Symptomatic recovery is relatively easy to obtain, but no patient should be considered cured whose urine is not free from pus and bacteria on two successive examinations.

While we are all familiar with cases of acute pyelitis corresponding to the above description and clinical course, it has been our experience that acute pyuria in male infants is usually associated with some congenital abnormality. Some authorities state that all cases of pyuria in male infants are due to some congenital abnormality of the genito-urinary tract, which interferes with drainage. We have recently seen two male infants in the wards of the Montreal General Hospital whose pyuria was rapidly relieved after the finding, at cystoscopic examination, of congenital strictures of the urethra which were amenable to dilatation. These two cases are mentioned simply to show that even very small infants, suffering supposedly from a simple pyelitis, should undergo examination in the hands of a competent urologist if there is not a prompt relief of symptoms under medical therapy.

CASE 1

F.S., male, a breast-fed infant, aged four months, was admitted to the paediatric ward of the Montreal General Hospital because of fever and pyuria. Cultures of the urine showed *B. coli*. The usual medical treatment produced prompt relief of symptoms and he was discharged from the hospital. He was re-admitted at the end of a week because of the return of his symptoms and, under ether, a cystoscopic examination was attempted. A stricture of the urethra in its membranous portion was found and dilated, with prompt relief of symptoms and an apparent cure.

CASE 2

A similar case was that of a male child of twelve months, who was admitted because of malnutrition. The only abnormal feature found on examination was pyuria. On cystoscopic examination a stricture was found, one and one-half inches within the urethra, and a second about one inch beyond this. Dilatation was carried out at weekly intervals. The child improved slowly, gained in weight and, at the last report, was doing well.

Pyuria in children of more than two years of age is much more common than we are usually led to believe, and it was interest in this class of cases which prompted us to present this paper. We have recently seen, in practice and in our clinic at the Montreal General Hospital, several cases of pyuria of long standing in older children, in whom we were able to find very definite evidence of interference with drainage from the kidney. In some we were

able to produce amelioration of symptoms by appropriate treatment. No doubt, the factors enumerated above concerning the infection of simple pyelitis in infancy hold true also for older children. Symptoms are usually quite indefinite, and frequently have no bearing on the genito-urinary tract, there being little if any fever, no malaise, or loss of appetite. On the other hand, the signs occasionally may be similar to those seen in pyelonephritis in adults, frequency, urgency, pain, foul-smelling urine, though these are the exception to the rule. Pain in the lower abdomen and bladder irritability are rarely present.

Many papers have been written on pyuria in older children. I would call your attention to two or three. The first is a paper by Helmholz,³ in which he showed how frequently this condition is associated with some abnormality, either congenital or acquired, of the genito-urinary tract. This same fact has also been brought out by Abt,⁴ who discusses congenital malformation as an etiological factor in cases of chronic pyuria. He records several cases similar to those which we intend to present. Also, McKhann⁵ relates the discovery of several cases of congenital abnormality by means of a cystogram. Hunner,⁶ of Baltimore, states that most cases of urinary stasis and infection in children are due to ureteral obstruction. He suggests that most cases of chronic infection of the upper urinary tract are due to stricture, congenital or acquired, of the ureter.

It is our belief that all cases of pyelitis in children beyond the age of infancy, and many protracted cases in infancy, are due to some organic cause, which can only be demonstrated by complete urological examination. Such examination consists not only of examination by the cystoscope and ureteral catheter, but also the use of preliminary x-ray photographs, and the injection of opaque substances into the pelves and ureters and bladder and further x-ray studies.

CASE 3

M.M., a female child of two years was admitted to the hospital with a history of having suffered for six months with pyuria, bouts of remittent fever, and tenderness in the right costo-vertebral angle, associated with loss of weight, pallor and anorexia. Examination of the urine showed pus cells singly and in clumps, which had persisted in spite of medical treatment. Cultures made at various times showed a pure growth of *B. coli*. Cystoscopic examination showed general inflammation of the bladder, strictures of both ureters and bilateral in-

fection. A pyelogram of the right kidney showed marked dilatation of the pelvis and destruction of the calices. Because of the bilateral infection, surgical treatment for removal of the infected hydronephrosis on the right side could not be undertaken. Following the cystoscopic examination and the improved drainage resulting therefrom, there was some temporary improvement in the child's condition. However, bouts of fever and constant pyuria have persisted. This case exemplifies the factor of too long continued medical treatment without resource to further examination, so that when the child was presented for investigation, bilateral infection had already taken place, as indicated by the recovery of *B. coli* from the left ureter, though no gross pus was found in the urine from the left side.

CASE 4

B.B., a female child, of nine years, had suffered from fever and occasional chills with constant pyuria for a period of three months. Her condition had not been improved by medical therapy. Cystoscopic examination showed the presence of four ureteral orifices, which were not inflamed, but the ureteral catheter could not be introduced into any one of the four spouting ureters. Presumably the two ureters on each side were kinked and entwined about each other, preventing catheterization or free drainage. No treatment was instituted.

CASE 5

M.C., a female child of one year, had been the subject of anorexia, pallor and occasional pyrexia for a period of six months. Cystoscopic examination revealed bilateral patulous ureteral orifices and x-ray examination demonstrated a reflux from the bladder up the right ureter. *B. coli* was recovered in pure culture. Attacks of pyuria and pyrexia have tended to recur to date, associated with acute respiratory infections.

CASE 6

E.M., a male child of nine years, was admitted to hospital complaining of fever and abdominal pain of a week's duration, associated with a mild degree of pyuria. Because of localizing symptoms in the right lower quadrant his appendix was removed, without improvement in his symptoms. Cystoscopic examination revealed a kink of the left ureter with the production of a mild degree of hydronephrosis. Following ureteral catheterization his symptoms cleared up rapidly and he was discharged well. Apparently the passage of an ureteral catheter so improved the drainage from the kidney that the infection cleared up.

CASE 7

D.D., a male child of seven years, was admitted to the hospital complaining of attacks of a lancinating pain down the right loin from the right costo-vertebral angle, relieved by the passage of large quantities of urine. Examination of the urine showed a mild degree of pyuria. Cystoscopic examination showed a right-sided infected hydronephrosis, due to an ureteral kink preventing the easy passage of the catheter. Operation for relief of his condition was refused.

CASE 8

O.B., a female child of 5 years, was seen because of loss of colour, appetite and weight over a period of three months, associated with a strong odour from the urine. A very marked pyuria was not improved by drug therapy. X-ray examination showed two calculi in the left kidney region and a pyelogram showed a stricture at the uretero-pelvic junction. At operation the stricture was found to be impossible to relieve. Nephrectomy was performed with prompt cure.

CASE 9

R.S., a female child of seven years, suffered at the age of two years from what was supposed to be an attack of simple pyelitis, which lasted for six weeks. Symptoms recurred again at the age of two and a half years and again at seven years, associated with fever and pain in the loin. Cystoscopic examination showed a block of the left ureter, due to a stricture, which could be entered by a small catheter, followed by a profuse flow of cloudy urine, from which *B. coli* was cultured. A pyelogram showed very marked dilatation of the pelvis. At operation this stricture of the ureter was found to be due to an aberrant blood vessel supplying the lower pole of the kidney and to a partial rotation of the kidney on its long axis. Nephrectomy was followed by complete cure and, to date, there has been no return of symptoms.

CASE 10

W.D., a female child of eleven years, was admitted because of pain in the right loin and pyuria, which had been present off and on for period of weeks during the last four years. Her pain in the loin was considered to be due to tuberculosis of the right hip, for which she was under suitable treatment. No explanation had been found for the recurrent attacks of pyuria. X-ray examination showed the presence of a stone in the pelvis of the right kidney, which was removed by pyelolithotomy, with relief of pyuria and pain in the loin.

CASE 11

A.W., a female child of seven years, was admitted to the hospital because of enuresis, frequency, puffiness under the eyes, and pyuria, which has been present at intervals for a period of years. X-ray examination revealed a calculus in the right kidney. Cystoscopic examination showed much pus present in the urine from the right kidney and a pure culture of *B. coli*. Prompt relief of symptoms followed the removal of the stone, with complete recovery.

CASE 12

W.C., a male child of three years, was admitted to the hospital for prolapsus ani, with retention of urine. The urinary retention was relieved by the removal of a small stone from the membranous urethra. Further examination showed fever and marked pyuria. X-ray examination revealed several stones in the pelvis of the kidney. Nephrectomy of the damaged kidney gave immediate relief of symptoms.

CASE 13

J.L., a female child of ten years, was seen complaining of fever, diarrhoea and vomiting for a period of three days. Examination showed a very marked pyuria, which improved rapidly under medical treatment. Three days later, following a chill, she complained of pain in the right costo-vertebral angle. Twenty-four hours later she presented, clinically, signs of acute appendicitis. At operation an acutely inflamed, retrocecal appendix was removed, with prompt relief of symptoms and subsidence of the pyuria. The acute pyelitis was apparently due to the acute inflammatory condition outside the pelvis of the kidney.

CASE 14

R.K., male, aged nine years, complained of left sided abdominal pain, nausea and vomiting, and enuresis. He had been ill for forty-eight hours. There had been several previous attacks of similar pain. Examination revealed a mass in the left loin and a mild degree of pyuria. Cystoscopic examination showed no shadow in the left kidney, presumably due to dilution of fluid in a hydronephrosis. Operation showed an adherent vessel constricting the ureter, which was divided and re-united behind the vessel. He was discharged well.

CONCLUSIONS

Simple pyelitis of infancy may be judged from the above to be a different disease, clinically, from the frequent pyuria of older children. It may be considered an acute, self-limited disease, responding comparatively readily to medical treatment; of short duration, characterized by a tendency to recurrence; and associated with the onset and course of other infections, either respiratory or gastro-intestinal. The pathological lesions found at autopsy vary from simple congestion of the bladder to marked pyelonephritis.

The somewhat similar condition in older children is, in our opinion, always associated with congenital or acquired malformations of the urinary tract, or some infection in the neighbourhood of either kidney or ureter. Such children may present a variety of symptoms, such as abdominal pain, fever, chills, emaciation and, occasionally, various disorders of micturition. Pyuria is the constant finding. Congenital or acquired malformations of the urinary tract lead to urinary stasis and when stasis occurs infection is likely to ensue. The pyuria which results runs a protracted course, associated with fever, emaciation, and progressive degeneration of the urinary organs. It is our belief that every child with a protracted pyuria which fails to respond to the usual methods of treatment should be subjected to cystoscopic and roentgenological examinations within a reasonable time. The extreme limit of this reasonable time we would consider to be a period of six weeks.

"One may confidently assert that pathological lesions of urinary tract in infants and young children are capable of fullest urological examination," (Patch⁷). We believe that such conditions should be investigated early, before marked degeneration of the urinary organs has occurred.

We are indebted to the members of the Department of Urology, Montreal General Hospital, for reports of cystoscopic examinations and permission to use cases.

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A CASE OF MONOCULAR BLINDNESS OF ELECTRICAL ORIGIN*

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TO my knowledge, medical literature records the observation of seven cases in which the two eyes have been lost from the dazzling effect of electric light, after having been exposed to the intense luminous rays of lightning, to the bright rays of the sun, and finally to the flash from a short circuit. As the patient considered in this communication has become blind of one eye only, after having been submitted at a short distance to the effects of electricity and of molten metal, I believe it interesting to publish his history, and will profit by this circumstance to recall the most recent theories on the injurious action of intense light upon the visual organ.

CASE REPORT

On the 25th of May, 1927, A.B., thirty-seven years of age, a labourer in a foundry, received the order to carry a bar of steel into an electrical soldering room. Entering these premises for the first time, he was keenly impressed with the description of the workings of the machinery by his companions. At a distance of four to five feet from the luminous source, he looked with persistence fixedly for a period of about eight minutes, without any protective glasses, at the rays emitted by a mass of metal in a state of incandescence under the action of a strong electrical current. During the hours which followed, a double ophthalmia declared itself, and a few days later he noticed a weakness in the vision of the right eye. The palpebral and conjunctival objective signs produced in the two eyes disappeared rapidly, as they always do with the ordinary therapeutical treatment, but the visual power of the right eye diminished gradually. At the time of my examination, on the 15th of January, 1928, I observed a cicatricial lesion of the retina near the papillary disk on the temporal side, a lesion of the macula lutea, a narrowing of the volume of the retinal arteries, and finally a generalized discolouration of the papilla, accompanied by a definitive optic atrophy of this eye which had reduced the vision to merely perception of light. The patient being seen only once, it is impossible for me to describe the neuro-retinal alterations which have successively followed since the time of the accident. However, I have been able to learn from the oculists who have observed him during the few months following his exposure to the dazzling rays, that, on the 12th of June, or eighteen days afterwards, the vision of the right eye was 1/10;

on the 27th of July the vision was still 1/10; on the 7th of October, a second oculist found it unchanged; and since that date the visual acuity had gradually diminished till it disappeared almost entirely.

As to the left eye, I have found that his condition was normal in every way.

Let us now, rapidly, consider how light acts upon the eye.

The action of light upon the visual organ may be manifested under different aspects, but what is interesting for us to note is the effect that it produces on the retina. Daylight, as we know, is decomposed by the prism to a spectrum of which one part is visible; the two extremities, the infra-red and the ultra-violet, do not cause, under ordinary circumstances, a sensation of vision in the human eye.

We will, then, put aside the action of the ultra-violet and infra-red rays. Indeed, the first are nearly all absorbed by the middle parts of the eye which protect the retina; this is what seems to be the result of the numerous researches made on this question. The second would have especially some calorific properties more characteristic of it, but whose influence upon the retina seems to be negligible. There remains between these two extremities of the spectrum the visible light which has not yet been absorbed by the other middle parts, and which brings to the retina a luminous energy which this, after absorption, must transform into chemical, caloric, and electrical effects, which will determine or accompany the visual sensation.

Whether light may be constituted according to the quantum theory, or by undulatory radiations, or by both at the same time, in every hypothesis it is necessary that it should be absorbed before it is able to produce photo-chemical, photo-caloric, photo-electrical and photo-sensorial modifications on the retina. These varied energetic transformations are not made without chemical or biological modifica-

* Read before the "Xe Congrès des Médecins de langue française de l'Amérique du Nord," Quebec, Sept. 1928.

tions of the retina which are interrelated and dependent on deep electronic modifications. Between certain limits, these modifications are reversible; beyond them they are destructive and permanent. The absorption which arranges them depends on the nature of the absorbent centres, on the wave length, and on the intensity of the incident radiations. Thus it is not astonishing that the radiations of a very intense visible light might produce serious and irreparable lesions of the retina by electronic modifications which give but very little heat.

The deeper study of the direct action of light upon the retina and upon the optic nerve will help us later on to understand better some lesions and some biological phenomena that we were accustomed to associate with the effects of heat.

All that I have stated in relation to daylight naturally refers also to electric and other lights. Consequently, it is easy to understand that even if a visible luminous source of a weak or medium intensity does not produce any harmful action upon the retina, under other circumstances a powerful light can produce transient or permanent lesions in the very delicate elements of this membrane, which may sometimes terminate in complete atrophy of the optic nerve.

We know that electrical ophthalmia is manifested upon the skin of the face and of the eyelids, and the anterior segment of the eye especially through the action of the invisible ultra-violet chemical rays, and of the invisible infra-red caloric rays, by a series of changes characterized by epidermitis, palpebral oedema, conjunctivitis, keratitis and iritis. I do not believe that it is necessary to insist more on this point, because it is admitted by all authors. However, I will recall that opinions are rather divided as to cataract of an actinic origin. A certain number of experimenters consider that the ultra-violet rays have the property of rendering the crystalline lens fluorescent, and that these invisible rays of a short wave length transform themselves into visible rays of a greater wave length. In admitting this hypothesis, it is easy to figure to ourselves that such a transformation of energy has probably the effect of modifying the crystalline body where the reaction is produced, and consequently that

cataract is possible. Other observers are of opinion that it is rather the invisible infra-red radiations which are responsible, and that the lental opacity is dependent on these latter rays. It is needless to add that numerous laboratory experiments have been done upon animals before arriving at such conclusions. And finally, a certain number of authors believe that neither the ultra-violet nor the infra-red rays can produce a cataract. However, it is a well known clinical fact, which I have myself noticed during my numerous travels in tropical countries, especially in Africa, in Oceania, in Central and South America, and particularly in Asia, that cataract is much more frequent in these latitudes than in countries where the sun is less powerful, though I believe that the great heat in these regions tends to modify the ocular nutrition, and that this phenomenon must be considered when discussing the etiology of cataract. Pursuing this line of thought, I ask myself, further, whether the food of the natives of these torrid zones, composed chiefly of fruits, vegetables and corn, should not also be considered.

As to the lesions of the deep layers of the eye observed following electrical dazzling, the retina is the membrane first affected. The macula lutea is particularly vulnerable to powerful luminous rays, and its alteration produces a central transient or definitive scotoma. The retina loses its transparency, and presents the aspect of a cloud, more or less oedematous, surrounding the optic nerve and the large blood vessels. The papilla may remain normal; however, under certain circumstances, it becomes inflamed, and its borders appear lightly stippled. The visual acuity is diminished by alteration of the central vision, and sometimes the visual field is narrowed. In the majority of cases all these phenomena disappear after a certain time, and the dazzling does not leave any trouble in the eye. In others, on the contrary, the papillo-macular bundle becomes atrophied, and this lesion produces only a permanent central scotoma. And, finally, when the light perceived has been intense, it may result in cicatricial islets in the retina, a diminution of volume of its blood vessels, and finally a discolouration and atrophy of the optic nerve, ending in blindness. Although these facts are not sufficiently discussed in the

treatises of ophthalmology, yet they are well known to the oculists who have observed patients seriously affected by electrical ophthalmia.

I should like to recall the few rare cases published in the medical literature where amaurosis has been observed.

Brière¹ gives the history of a young girl of eleven years of age who, after having walked during a violent storm on a road illuminated by lightning, presented the ophthalmoscopic symptoms of a double neuro-retinitis, and finished by losing her eyesight.

Rohmer²⁷ relates the observation of a boy, twelve and one-half years of age, who was overthrown by lightning, which struck a tree at a distance of a few paces from him. The final result of the shock and the dazzling was a double papillary atrophy.

Knies mentions also a case of optic atrophy in a child of ten years of age, following electrical ophthalmia.

Brandenburg¹⁹ publishes the case of a patient who had a neuro-retinitis followed by an optic atrophy after having worked outside all day long under an ardent sun.

And, finally, Terrien,⁴² who had given special attention to this question, after having observed about fifty subjects during the construction of the Metropolitan Underground Railway of Paris, has seen atrophy of the optic nerve following electrical dazzling on three occasions.

In my patient it is interesting to note that the deep layers of his left eye had not been injured at the time of the accident, and that the vision of this eye was normal. However, it is natural to suppose that when he was looking at the very strong light, a reflex movement had caused his head to turn towards the left side, and, thus placed, the corresponding visual angle of this side presented less surface to the effects of the injurious visible rays upon the left retina, the pupil being protected by the nose. In the present case, must we believe that the lesions of the retina, and the consecutive atrophy of the right optic nerve, had been produced by the electrical source itself, or by the visual light from the molten metal, or, possibly, by both kinds of radiations? It is rational to conclude that all the incandescent particles had contributed to the ultimate effect, those that the electric arc had detached, as well as those

which had remained adherent to the solid, but each one according to its temperature and its characteristic radiations.

It is probable also that the rays had fallen slightly obliquely upon the face, and that the active luminous surface had not been very extensive, since the left eye had been protected by the nasal pyramid in a slight deviation of the head, as I ventured the suggestion a moment ago.

This case of monocular blindness of electrical origin is unique in medical literature, and I submit it to the individual interpretation of my colleagues.

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CONVALESCENT SERUM IN THE PREVENTION OF MEASLES*

By WM. WARWICK, M.D.,

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IN 1916, Nicolle and Conseil, in Tunis, were the first to use the serum of a convalescent measles patient as a prophylactic measure. Shortly after, other workers confirmed these results and since then the procedure has been applied in various countries, not with the idea of preventing epidemics, but in an attempt to prevent or lessen the severity of an attack in that age-group in which measles has its greatest mortality, or, still more strikingly, in the prevention of institutional outbreaks.

Richardson and Jordan, of Providence, in the *American Journal of Public Health* in June, 1927, reported very fully on the use of convalescent measles serum in that city in the previous year. Some 205 children in two asylums, 62 children in the Providence City Hospital, and 550 children under the care of private physicians were treated with serum after exposure to infection. Their results were reported in great detail, and the general conclusions reached were that 50 to 75 per cent of susceptible children receiving convalescent serum did not develop measles, and, in most instances where the disease did develop, it was much milder in character.

Another interesting report was that of Ruhland and Silverman, Syracuse, of the epidemic of 1926-27 in that city, when 155 patients received convalescent serum, of whom 48 per cent developed modified measles and 52 per cent did not show any manifestations of the disease. There were no deaths in this series.

These examples serve to show that there is a very considerable value in the use of convalescent serum under certain conditions; but one is often inclined, in reading these reports, to feel that the application of such methods is almost impossible in any but very large centres.

Those of you who have previously experienced an epidemic of measles in an infants' home, know only too well what your feelings are when you learn that such children have been exposed to infection, and how readily you would grasp at any procedure that would offer even a moderate lessening in the extent of the catastrophe that is bound to ensue.

Having had an experience of this sort a few years ago, with a 24 per cent mortality rate, you can imagine my feelings when, on the morning of March 12, 1927, I was advised by the attending physician that he had just seen a case of measles in one of the attendants in an infants' home in Saint John, New Brunswick. On in-

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vestigation, I found that the case was a nurse-maid, on night duty, who had charge of all the 69 children in that home, none of whom were known to have had measles, ranging in age from 3 months to 4 years, and that she had been in very intimate contact with them on the nights of March 8th, 9th and 10th, while suffering with the usual prodromal symptoms of measles.

I at once solicited the assistance of the Director of Laboratories, obtained permission of the Home management to spend \$50.00, if necessary, in obtaining blood, and then started a hunt for donors. Luckily, three young women were found who were rather intrigued by the suggestion of saving a number of lives, and, at the same time, receiving at least a week's income for so doing. These donors had had measles 3 to 5 and 6 weeks previously. To make a long story short, exactly twenty-four hours after the diagnosis of measles had been made, the inoculation of the children began. Fifty were done at that time, and the balance on the following morning, making the time $4\frac{1}{2}$ and $5\frac{1}{2}$ days after first exposure. The blood serum was not pooled. Accepting Richardson and Jordan's advice that 6 c.c. of serum was not sufficient, 10 c.c. was given to all but 12 of the older children, and these were given 6 to 7 c.c. only because of shortage of supply.

On March 15th, seven days after first exposure, two children had temperatures of about 101 degrees, with slightly watery eyes; temperatures were normal in 12 hours. Three children, on the 8th, 9th and 10th days respectively after first exposure, developed slight serous discharge from one ear, but this quickly cleared up. On the 10th and 11th days after first exposure, five children showed mild symptoms, such as slightly swollen eyes, slight cough and slight atypical rash, but the temperature normal in all cases. These were the only children in whom one felt justified in making a diagnosis of modified measles.

Just to prove that there was no mistake in the diagnosis of the original case, another attendant, who had never had the disease, developed typical measles in about 14 days, and although the management had been warned that this girl was to be removed from contact with the children, such was not done, with the result that about 20 of these children, between 3 and 4 years of age, were again exposed, but

with no untoward results. The matron, having had experience with the use of horse serum on other occasions, was particularly pleased at the entire absence of reactions, local or general; and, as she expressed it: "Not one of the babies missed a bottle."

We all felt that the expenditure of \$55 and a little extra labour was well justified by the results, and, I think, we convinced the Home management that there was much to be gained by prompt co-operation with the Department of Health.

In the spring of this year, 10 patients in the Children's Ward of the General Public Hospital were exposed to measles on March 13th. Three days later, each was given 10 c.c. of serum from a patient who had just been discharged after an attack of measles. Subsequently it was learned that 4 of these children had a history of measles previously. Only one of the others showed any symptoms—slight rash without temperature or cough on the 14th day. In this instance too, a nurse, on duty in this ward when the original case occurred, came down with a well pronounced attack of the disease in the usual time.

In regard to the use of convalescent serum, it seems to be the general opinion that, if given within 4 days after infection, the disease is prevented in a considerable majority of cases; if within 5 or 6 days, measles will either be prevented or the attack greatly modified; if 7 or more days have elapsed, there is practically no protection in the doses mentioned. The immunity is passive and lasts from 3 to 6 weeks.

The advantages of the use of such serum are in the protection afforded infants and young and debilitated children and the stopping of the spread of institutional outbreaks. In those cases where measles does develop, the attack is generally mild, and this attack, of course, gives lasting immunity, a much to be desired result.

The disadvantages are:—possible lack of potency of the serum and difficulty in finding donors or the money to pay them. The preparation of the serum is not a difficult matter, especially if there is a laboratory or hospital available. If, at the beginning of an epidemic, preparations were made for a supply of such serum, many of these apparent disadvantages would disappear.

That convalescent measles serum has a very definite value, under certain conditions, is well known to all, but possibly it has not been used outside of the large cities to the same extent that it might have been.

In the hope that those who have not already done so may be induced to give it a trial, when the next measles epidemic appears, lies my reason for bringing this matter to your attention.

AN OUTLINE OF THE DIAGNOSIS OF SPINAL CORD TUMOURS*

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WHEN there is evidence of interference with the normal function of the spinal cord or spinal nerves it is important to correctly diagnose the cause. It is true that, in many instances, after the diagnosis is made very little remains to be done in the way of treatment. However, in certain cases much can be done. This is especially true if the lesion is a spinal cord tumour, and if the diagnosis is made before there is irreparable damage to the cord. When it is recalled that nearly one-half of the spinal cord tumours are benign and relatively easily removed, it is worth while investigating very fully any case which presents signs or symptoms suggesting a tumour. The object of this brief presentation is to review the usual signs and symptoms of a spinal cord tumour and to point out the manner in which a case may be investigated and a diagnosis made.

The practitioner is likely to have his suspicions aroused by such complaints as pain, which is persistent and has no obvious cause, weakness of various muscle groups, changes in sensation, or interference with bladder control. The investigation of a case is interesting and frequently does not involve any difficult technical procedures. The history should disclose the onset and duration of the various symptoms. The examination should elicit information regarding changes in sensation, in reflexes, weakness of muscles, or evidence of disease of the bony spinal column. The blood is tested for anaemia; the cerebro-spinal fluid is examined.

EXAMINATION FOR CHANGES IN SENSATION

This important, but tiring, part of the examination is usually carried out first, before the patient and the examiner become fatigued. With the patient stripped and on his face, sensation for light touch is tested systematically by asking the patient to say "Yes," each time he is touched with cotton wool. The patient's ability to differentiate heat from cold is tested by using two test tubes, one filled with hot water and the other with cracked ice. Sensation for pain is tested by a pin. Any area of hypersensitiveness is carefully noted. Vibratory sensation is tested by a tuning fork placed on the tibia. With the patient on his face the examination of the important sensory areas supplied by the sacral segments and nerves is not neglected. When this examination is completed it is convenient to analyze any history of pain which may have been obtained.

Irritation of a dorsal nerve-root causes pain. This pain will be referred to that part of the body which the nerve supplies. For instance the pain produced by irritation of the right eleventh dorsal root will radiate to the right lower abdomen. Tumours still lower, involving the cauda equina, may cause pain which radiates into the legs and feet. This pain is usually accompanied by other symptoms such as muscle weakness, numbness, or difficulty with bladder control, and should lead one to suspect that the patient is not suffering from some malady such as chronic appendicitis or sciatica. Occasionally, however, pain is the only symptom for months or even years before other outstanding signs or symptoms arise. The pain may be continuous or intermittent and is

* Presented before the Forty-ninth Annual Meeting of the Ontario Medical Association at Hamilton, May 29, 1929.

usually aggravated by any procedure which raises the tension of the cerebro-spinal fluid, such as sneezing or straining at stool.

Pain may also be complained of in parts of the body not subserved by the dorsal root or cord segment involved. This is exemplified by a patient who two years ago had an extra-dural tumour removed at the fifth dorsal segment. She was almost completely paralysed and had practically a total loss of sensation below the level of the lesion, yet for months before and after her operation she complained bitterly of pain in the calves of both legs. This pain was not associated with any spasmodic contraction of the muscles. Recently she has recovered sufficiently to walk and this pain has disappeared. A paper by Purves-Stewart and Riddoch* suggests that interference with the nutrition of the lower segments of the cord will cause pain in a situation far removed from the actual lesion. If this be the explanation it follows that other symptoms, such as paralysis or loss of sensation, should direct suspicion to a lesion of the central nervous system. When, however, the pain is caused by pressure on a dorsal root and precedes other symptoms it not infrequently happens that these patients are operated on unwisely, and especially is this true when the pain is referred to the abdomen. Of course pain is not a constant symptom of tumours of the cord. Tumours which arise within the cord itself usually cause little or no pain. This is one of the chief differential points between extra- and intra-medullary tumours.

Any disturbance in sensation together with areas in which pain is felt are charted on a sketch, and the lesion may be localized by referring to an anatomical diagram.

EXAMINATION OF THE BACK

A careful examination of the spinal column is made, preferably with the patient standing, and any muscle spasm or limitation of motion, deformity, or tenderness is noted. A roentgenological examination may or may not be considered necessary.

* Quoted by Theodore Thompson, *Leptomeningioma of the spinal cord*, *The Lancet* 1: 327, Feb. 16, 1929

EXAMINATION FOR MUSCLE WEAKNESS, ATROPHY OF MUSCLES AND CHANGES IN THE REFLEXES

Commencing with the shoulders and arms, then passing to the trunk, and finally the legs, a note is made of any muscular weakness or atrophy, or changes in reflexes. The usual reflexes tested are the bicipital at the elbow, the upper and lower abdominal, the knee, ankle and the Babinski.

Muscle weakness, atrophy, and changes in reflexes are brought about in two ways:

1. When the tumour sufficiently compresses the cord so as to interfere with the pathways from the brain, signs of an upper motor neuron lesion develop below the level of the tumour. These signs will be, first, an increase in the reflex contraction of the muscles to a stimulus, followed by weakness or paralysis of the muscles. The muscles will be spastic and show only a slight atrophy from disuse. The increased tonus enables one to demonstrate an ankle clonus. Interference with the pyramidal tract causes dorsi-flexion (positive Babinski sign) instead of plantar flexion, on stimulating the sole of the foot.

2. At the site of the tumour one or more peripheral nerves may be involved, and in the area supplied by these roots or cord segments there will be the signs of a lower motor neuron lesion, namely, marked weakness and atrophy of the muscles with the reflexes diminished or absent. The muscles will be flaccid, not spastic. Tumours low in the spinal canal, which are below the cord and involve the cauda equina, cause this flaccid paralysis with marked atrophy and loss of reflexes by direct pressure on the nerves before they leave the spinal canal. Analysis of the cord segment or spinal nerves involved may be carried out by reference to anatomical diagrams.

DISTURBANCES IN FUNCTION OF THE BLADDER AND RECTUM

A patient with a compression of the cord usually develops bladder and rectal symptoms relatively late in the progress of the disease. According to Spiller and Elsberg, this is true even in lesions involving the cauda equina. In tumours above the lumbo-sacral cord the first symptom is usually a difficulty in starting urination. This may lead to a retention of urine and overflow. True incontinence oc-

asionally occurs from loss of all reflexes in the musculature of the bladder and sphincters in the case of a large growth involving the lumbosacral cord or cauda equina. Constipation is almost the rule in spinal cord tumours. Incontinence does occur if the contents reach the rectum in a fluid state. Early bladder and rectal disturbance is suggestive of an intramedullary lesion of the lumbosacral segments of the cord.

EXAMINATION OF THE CEREBROSPINAL FLUID

In many cases such a systematic examination and history, as outlined, will enable one to make a diagnosis, and, by reference to anatomical charts, the localization of a spinal cord tumour. Indeed, until a few years ago, apart from an exploratory laminectomy, the diagnosis depended entirely on these procedures. To-day, earlier and more exact diagnosis is made possible by the examination of the cerebro-spinal fluid and its pathway around the spinal cord. This examination is conveniently discussed under three headings.

1. *Lumbar Puncture.*—About 10 c.c. of cerebro-spinal fluid are obtained. The colour is carefully noted by comparing it with an equal amount of water in another test tube. If the fluid has a yellowish tinge it is strong evidence in favour of a tumour. One of the simple tests for globulin is carried out. An increase in globulin is also evidence in favour of a tumour. A cell count is made, and special care must be taken to make sure that any cells seen are not red blood corpuscles. A small amount of fresh blood will cause confusion by giving a yellowish tinge to the fluid and a positive test for globulin; if there is blood in the fluid it should be centrifuged and the supernatant fluid will then appear clear. Any increase in the normal cell count is in favour of an inflammatory lesion rather than a tumour. A Wassermann test is carried out on the remainder of the fluid. A patient may have syphilis of the central nervous system and give a negative Wassermann reaction in the blood and a positive test in the cerebro-spinal fluid.

Queckenstedt and Ayer Tests.—It is obvious that any expanding lesion which is interfering with the function of the spinal cord will sooner or later block, either partially or completely, the cerebro-spinal fluid pathway about the cord.

When this occurs the transmission of any increase in the pressure of the cerebro-spinal fluid above the block will be interfered with. It is on this basis that Queckenstedt developed his test.

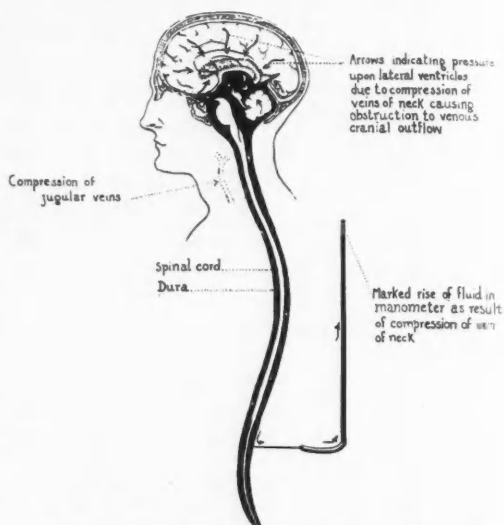


Fig. 1.—Schematic drawing showing mechanism of alterations in the cerebrospinal fluid pressure. A marked rise in intracranial pressure takes place when the venous cranial outflow is obstructed by compression of the veins of the neck. The cerebrospinal fluid is forced out of the cranial cavity into the spinal subarachnoid space, causing a marked rise in the manometer in connection with the lumbar sac.

From a paper by Stookey, Merwarth and Franz

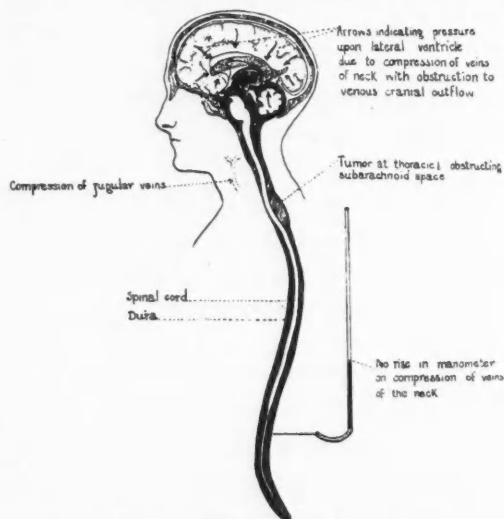


Fig. 2.—Schematic drawing showing mechanism of alterations in the cerebrospinal fluid pressure in the presence of a subarachnoid block. Compression of the veins of the neck forces fluid into the spinal subarachnoid space; however, a block in the subarachnoid space does not permit transmission of the increased pressure of the fluid above the tumour to the fluid below the tumour; consequently, no rise in the manometer in connection with the lumbar sac takes place.

From a paper by Stookey, Merwarth and Franz

With the patient on his side a lumbar puncture is done, and a manometer which registers pressure by the height to which the cerebro-spinal fluid rises is attached to the needle. The pressure of the cerebro-spinal fluid about the cord is then increased by compressing the jugular veins, thus causing an increased volume of blood in the cranial cavity. Normally, there will be an immediate rise of the cerebro-spinal fluid in the manometer, and when the pressure on the jugulars is released there will be an immediate and rapid fall to the original level. (Fig. 1). If on the other hand there is an obstruction in the cerebro-spinal fluid pathway about the cord, the fluid in the manometer will respond sluggishly or not at all, as the increase in pressure cannot be transmitted readily past the lesion (Fig. 2). When the block is complete, interpretation of the test is easy, but, if only partial, the differentiation of a sluggish rise and fall from the normal rapid rise and fall may be difficult. Stookey has suggested refinements in the test which in his hands have made possible the diagnosis of very slight blocks. Personally, when there is doubt in the interpretation of the test, I prefer to do a double puncture, as advocated by Ayer. With this test, when there is a partial block the difference in the rise and fall of the cerebro-spinal fluid in the

two manometers (one above and the other below the lesion), is very striking. (Fig. 3).

LIPIODOL INJECTION INTO THE SPINAL CEREBRO-SPINAL FLUID PATHWAY AND EXAMINATION WITH X-RAY TO DETERMINE IF THERE IS ANY OBSTRUCTION TO THE FLOW OF THE LIPIODOL DOWN THE PATHWAY

This test is only used after one has determined by the Queckenstedt or Ayer test that a block exists and a sufficiently accurate level cannot be established by clinical examination to justify operation. When this situation arises injection of lipiodol is a most valuable aid. One c.c. is injected into the cisterna magna. The patient is immediately examined in the upright position with the fluoroscope and the downward flow of lipiodol is observed. If there appears to be an obstruction a plate is taken to check the observation. If there is a complete obstruction, operation should be performed within twenty-four or forty-eight hours before the lipiodol becomes encysted by an inflammatory reaction. After the tumour has been removed, the head of the bed is kept raised for a week or so to make sure that the lipiodol finds its way to the bottom of the lumbar sac, where it becomes encysted and apparently gives rise to no trouble.

DIFFERENTIAL DIAGNOSIS

Diseases of the spinal cord can be separated into two large groups:

1. *The System Lesions.*—Those in which the morbid changes are confined within the limits of certain columns.
2. *The Non-System Lesions.*—Those in which the morbid changes are distributed irregularly through the substance of the cord quite irrespective of column formation.

The System Lesions.—Reference to the accompanying diagram enables one to quickly review the more common system diseases. A number of these lesions cause paralysis. A spinal cord tumour which has progressed far enough also causes paralysis, but sensory changes usually follow quickly. Only in No. 5, (sub-acute combined degeneration), do we have this combination of paralysis with sensory changes. Usually, however, the differential diagnosis is not difficult. Sub-acute combined degeneration is

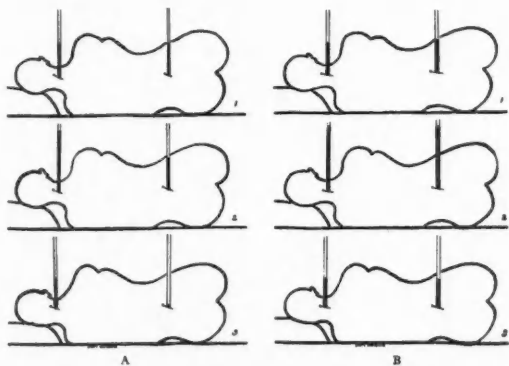


Fig. 3.—A, diagrammatic representation of some of the findings in Case 4, showing spinal subarachnoid block. (1) Initial pressures, on same level; (2) effect of jugular compression. Pressure rises promptly in cistern, not at all in lumbar manometer. (3) Effect of withdrawal of 6 c.c. of spinal fluid from lumbar sac. Pressure here falls to zero; pressure in cisterna magna unaffected. The lumbar fluid contains an excess of protein; that from the cistern is normal.

B, same case as in A. Tests repeated two months after removal of extradural tumour. (1) Initial pressures; (2) effect of jugular compression; (3) result of withdrawal of 5 c.c. of fluid from lumbar sac. The fluids in both manometers now maintain the same level under all conditions. The two fluids are now similar in character.

From a paper by James B. Ayer

DIAGRAM

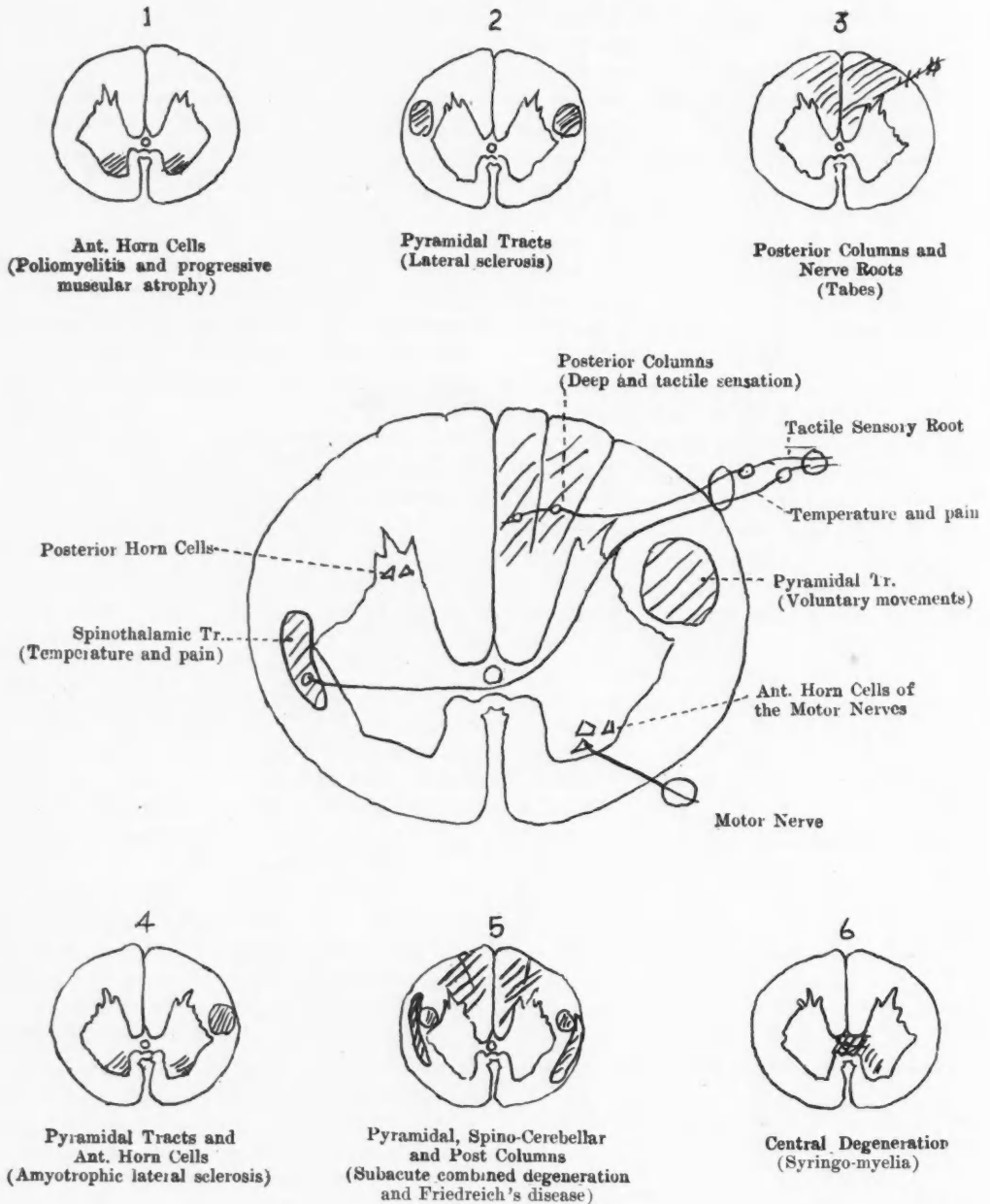


FIG. 4

generally associated with some severe anæmia or toxæmia. The symptoms from involvement of the pyramidal tract (weakness, spasticity, etc.), usually precede by some time any sensory changes. Frequently with a tumour one side of the cord is more affected for a time than the other (Brown-Séquard phenomenon), whereas in sub-acute degeneration the signs are symmetrical. The examination of the cerebro-spinal fluid and its pathway will not present any evidence suggestive of a block.

The Non-System Lesions.—The non-system lesions present more difficulties in differential diagnosis.

(a) *Inflammations (myelitis) and Vascular Lesions.*—In some cases there is a primary inflammation brought about by the direct invasion of organisms or their toxins by way of the lymph and blood streams. In other cases the changes in the cord are secondary to interference with the blood supply. Acute infective diseases and syphilitic endarteritis are the more common causes. The signs and symptoms will vary with the level and extent of the lesion. When associated with acute infective diseases the onset of paralysis and sensory loss is usually rapid, often only a matter of hours. When a vascular lesion is the underlying cause the onset may be slow and simulate closely a tumour. If the Wassermann test is negative, a spinal cord tumour must be ruled out by the negative findings in the cerebro-spinal fluid and its pathway.

(b) *Diffuse and Disseminated Degenerative Processes, such as Syringomyelia and Disseminated Sclerosis.*—In disseminated sclerosis the sclerotic patches may be scattered in various places throughout the central nervous system, so that at some stage this disease may simulate almost any other of the degenerative lesions and also a pressure myelitis from a spinal cord tumour. When one sees the fully developed and typical syndrome as in Fig. 5, the diagnosis is not difficult. Often however, a spinal cord tumour can only be ruled out by study of the cerebro-spinal fluid and its spinal pathway.

Syringomyelia, when typical, is not difficult to diagnose. The degeneration in the centre of the cord causes a wide band of loss of pain and temperature sense, by interfering with the sensory fibres as they cross to the spino-

thalamic tract. Extension of the disease into the anterior horns causes atrophy and paralysis in the area subserved by the levels involved in the cord. The lesion is most commonly situated in the upper part of the cord, so that there are relatively few signs in the legs. When the lesion occurs lower down and gives signs in the legs the diagnosis from a cord tumour may be

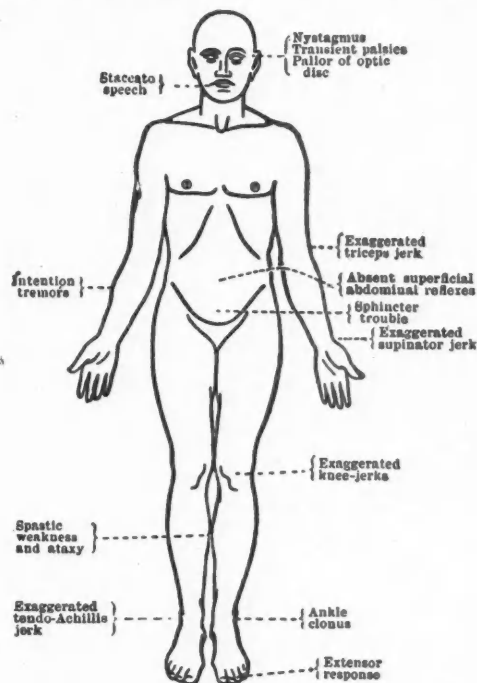


Fig. 5.—Scheme of the principal symptoms occurring in the course of disseminated sclerosis.

Diseases of the Nervous System, Thomson

very difficult. The length of the history and the examination of the cerebro-spinal fluid and its spinal pathway are the most helpful aids.

(c) *Pressure from without as in Spinal Caries, Injuries, etc.*—Lesions due to these causes seldom offer great difficulty in diagnosis when a thorough examination of the back and roentgenological studies are carried out.

In conclusion I would emphasize that tumours are relatively common lesions of the spinal cord, and, that approximately one-half of the tumours are benign and can be removed. Complete return of function is to be expected if complete paralysis has not persisted for more than a few months.

THE QUEEN ALEXANDRA SOLARIUM FOR CRIPPLED CHILDREN

By C. WACE, F.R.C.S.,

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THE Queen Alexandra Solarium, at Malahat Beach, Cobble Hill, V.I., was opened on March 1, 1927. Since that date 146 children have been under treatment. This small number of patients does not allow of any statistics of value being published on the clinical aspect of our work, but there are some general principles we are following which we consider worthy of consideration, even with our short experience. For a clear understanding of these it is necessary that I should explain the purpose and the ideals that were present in the minds of the founders of the Solarium and give a short description of the site and character of the building. Before doing so it may be of interest to record briefly the circumstances out of which the Solarium has sprung.

In 1922, a mother on one of the islands off the east coast of Vancouver Island wrote to the Secretary of the Women's Institutes of British Columbia, asking for help for her crippled girl. This ten-year old girl was suffering from tuberculous disease of the spine. She had been an inmate of a large city hospital for a period of many months; but the time came, as it invariably does in such cases, when her bed was needed for a more acute case, and she was sent home in a plaster casing. It is easy for us to realize the problem this mother had to face, with no doctor nearby, no trained nurse, no experience to guide her, miles by sea from a hospital, and her days filled with hard work.

The Women's Institutes of this province at once interested themselves in the problem of "the crippled child," and it is largely owing to their efforts that the Solarium was built.

The founders of the Solarium recognized from the outset that there were certain principles which should govern their work on behalf of the crippled children: (1) the great importance of the prevention of illness in childhood; (2) the need for the prolonged treatment and education of children suffering

from certain chronic types of disease; (3) the training of the cripple in some useful handicraft or trade that will make him or her independent of charity and dependence on others in later life, and an economic asset in the community.

Before going more fully into an explanation of these three principles it is necessary to clearly define what we mean by a crippled child. In the mind of the ordinary layman this term means simply a child with some physical deformity. This conception of the term is misleading and inadequate; it entirely fails to recognize the claims of a large number of children who are as truly crippled as many with obvious physical deformities. The definition of a cripple adopted by the Board of Directors of the Solarium is this: "A child whose normal physical activities are crippled by illness, accident, or from birth, whether physical deformity is present or not." This definition covers a far wider range of illness than is usually found in orthopaedic hospitals and is, we maintain, amply justified both from the practical and scientific point of view.

With regard to the first of these ideals, there is, in the publications of the New Zealand Ministry of Health, a saying which seems to me to aptly sum up our duty in this matter, "It is wiser and better to build a fence at the top of the cliff than to keep an ambulance at the bottom." When we realize how often in childhood we meet with cases of protracted ill health, due to many varying causes, and so indefinite that it is well-nigh impossible to give an exact diagnosis, we must, I think, be impressed with the great need of some system which will enable us to treat the child adequately over a prolonged period of time under conditions that will give it the best possible chance of complete recovery. We are fully aware of the early infection of children with tuberculosis, a very indefinite clinical type, but one which, if we are to save them from some

acute manifestation of this disease in later years, requires prompt, efficient and long-continued treatment. We recognize the child suffering from some obscure, so-called "rheumatic", affection, a child obviously in poor health. Such are not cases for sanatoria or city hospitals.

When we consider the second of our principles, we are more than ever convinced of the need of facilities for prolonged treatment under the best conditions in certain diseases of childhood and the importance of education during this period of treatment. I have mentioned one case of tuberculous disease of the spine. It has been a matter of surprise to me how many similar instances we have had. I will refer to two: a boy of twelve years old who had spent eight years of his life in and out of hospitals with a tuberculous knee; a child of seven years, now our patient, with a severe spinal deformity from tuberculous disease, which started before he was three years old. It is unnecessary to multiply instances. To cure a tuberculous spine or joint may require years. Can such patients be kept in active treatment hospitals for the necessary period of time, even if such a hospital is the ideal place for treatment to be carried out? What will be the result if they are sent home before arrest of the disease in jackets or plaster casings?

It has been truly said that "the cripple is made not born," and this applies not only to such children as I have already spoken of but equally to cases of anterior poliomyelitis. In this disease, perhaps more than in all others, the importance of resting and safeguarding the weak muscles and controlling the strong ones is of paramount importance. Usually the child either goes home from hospital as soon as the acute stage is past, or is treated at home from the beginning. When we realize the amount of technical knowledge, patience, and care that is required in these patients, to give them a chance of muscle recovery and to prevent deformities, it is asking for trouble to expect a mother to undertake this responsibility. It is laid down by such experienced surgeons as Jones, Lovett, and Frazer that, following an attack of poliomyelitis, "walking before the end of the first year is completed is to incur an undue amount of risk." Parents cannot be expected to understand and realize the impor-

tance of rest, avoidance of overstretching of weak muscles, prevention of deformities, and it is impossible, except under very exceptional home and nursing conditions, to treat such cases adequately for two years at home.

The cripple then is made, not because the best intentions have not been present, but because there have been no facilities for carrying out these good intentions. The orthopaedic surgery of the present day is a marvel in reconstruction, but where it becomes necessary to remedy deformities after infantile paralysis it is a confession of the failure of early treatment.

Education for the cripple during the long period of treatment is of vast importance, whatever the primary disease may have been. We find these children have had practically no education for years, and yet if, as is so often the case, they must face a life-time of physical disability, is it not our bounden duty to give them every help to attain a degree of mental activity that shall in some degree compensate them for the want of their physical activity. Thanks to the generous and active support of the Government of British Columbia, the Solarium is granted the services of two Government school teachers by the Department of Education, and the ordinary routine of a school is carried on both in the morning and afternoon.

From the education of the cripple to the training of the cripple, our third principle, is a direct and logical step, and no scheme can be complete that does not provide for the technical training of the cripple between the ages of fourteen and seventeen or eighteen years. The training must be a real apprenticeship, of not less than three years, and experience has indicated that boot-making, tailoring, and leather work are the most suitable occupations. The Heritage Craft Schools of Chailey in England have trained and sent out as skilled craftsmen just a thousand cripples during the last twenty-five years. The Treloar Homes at Alton, under Sir Henry Gauvain, have trained close on five hundred. But let there be no misunderstanding about this training. It is not a case of workshops producing goods for sale; it must be a strict and thorough apprenticeship to fit the cripple to become a wage earner in the open market and an economic asset in the social state—in the words of Mr. T. P. O'Connor, "To raise him to the joy,

the hope, and the dignity of being a self-supporting citizen." Our Cripples' College and Technical School for both boys and girls is a dream of the future and is dependent on the financial help we receive.

I think it will be universally conceded that the climate of the south end of Vancouver Island is one of the best in Canada. The average temperature ranges from 39° to 60° in July and August. The rainfall is about 28 inches in the year. The average of bright sunshine, exclusive of what we speak of as skyshine, is more than 2,200 hours a year. I mention these figures because they have an important bearing on the type of building we have adopted.

The Solarium is situated in a sheltered bay on the west shore of the Saanich inlet, about

the way, thus providing an open-fronted effect whenever desired. Three double doors give access from these wards to an open verandah the entire length of the building and 12 feet wide. Sloping ways are provided from the verandah down to the garden in front of the building. On the south-west corner of the building is an enclosed verandah, 70 feet by 14 feet wide, with a large bay window and an open fireplace. This room is fitted up with a blackboard and individual locker-seats for each child. On the north-west angle of the building, and separated from the main ward, is a self-contained unit for the isolation of new arrivals; and at the north end of the long wards are the massage, electrical, and physio-therapy rooms, facing east and south, with large folding windows, so that all treatments



The Queen Alexandra Solarium at Malahat Beach, Mill Bay, Vancouver Island.

fifty yards from the beach, on gently sloping ground, thirty miles north of Victoria and about sixty miles south of Nanaimo. The building is of bungalow type and has a total length of 240 feet, by an average width of 50 feet, and faces eastward, slightly angled to the south. The entire building rests on solid concrete foundation walls, the inside walls being finished in hardwall plaster, with "Lamateo" panel dadoes; the outside walls, which are of frame construction, are finished in cement stucco; and the roof is covered with slate-surfaced roofing.

The main floor comprises the following. Three ward units, which are separated by folding, sliding glazed doors, provide a total accommodation for about fifty-five beds and cots. A special feature of these wards is the window arrangement in front, the windows being so planned that all may be opened and folded back out of

during the morning can be carried on in the bright sunshine and open air. The verandah, overlooking the garden and sea, is protected from showers and excess of sun by heavy canvas screens, and is in use all the year round, and whenever possible the beds are kept out both day and night.

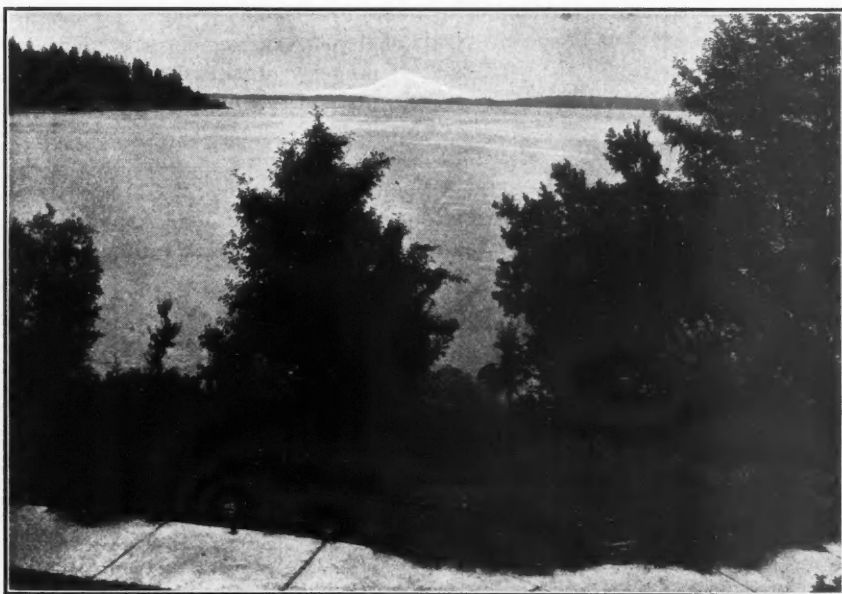
The sloping runways terminate in a concrete path which leads to the beach and salt water swimming pool. This pool, which can be filled at high tide and emptied at low, has a floor and retaining wall of concrete, surmounted by iron posts, chains, and heavy wire netting. It is three feet six inches at the deepest part, and has a floor space of 2800 square feet. The temperature of the water in the summer is frequently 80° to 86° .

In this account of the Solarium it will be noticed that no mention is made of an operat-

ing room, and this omission requires some explanation. We do not admit acute cases of illness requiring operations; we regard ourselves as the post-operation, long-treatment, educational and training centre, and not as a hospital. We rely in our work on all methods of physio-therapy and mechanical appliances, combined with the maximum of open-air and sunlight, augmented when necessary by violet-ray lamps, regular hours of school and play, the maximum of sleep by night, and a good mid-day rest.

"the long treatment and education centre," the city hospital as "the casualty clearing station."

No admission to the Solarium is made by the Medical Superintendent until after a form of application has been received from the parents, signed by their doctor, and any doctor is at liberty to attend his own patient, while an inmate. The minimum charge is \$6.00 a week, but no child ever has been, or ever will be, refused admission because the parents are unable to pay this small charge. At the present



View of Mount Baker from the Queen Alexandra Solarium.

It is not, we believe, sound policy in such work as ours to mix post-operative cases and cases of acute illness with our other small patients. We want regular hours of school morning and afternoon; we want in playtime to see the children happy and cheerful, reasonably noisy, playing about freely; we want the right childhood atmosphere in the ward and the play room; and we believe that this is very important for their immediate treatment and future life. The knowledge and realization that in many cases they are not as other children, and never will be, has often a depressing effect on their minds; it is a part of our work to overcome this "inferiority complex," and to enable them to carry on with courage and determination. In short, we regard ourselves as

time 45 per cent of the parents can pay nothing.

A consulting and specialist staff of well-known doctors from Victoria generously give their assistance at all times. A Board of twelve Directors, with a representative of the Government of British Columbia and of the City of Victoria, are responsible for the general management. The Solarium has no endowment fund. It is supported by grants from the government, under the British Columbia Hospital Act; by grants from the municipalities for their children, (these latter grants are an act of grace and not a legal obligation); by payments from parents when possible; and by the generosity of the public. The average cost per child per day during the last eighteen months has been a little less than \$2.00. The line

of policy we have adopted at the Solarium is in many respects different from what is usual in Canada but, especially in England, this policy of long treatment, education, after-care, and technical training has been brought to a great state of perfection. We do our best by letters, interviews, and reports from public health nurses and doctors to keep in touch with all our old patients, but this, owing to long distances and expense of travelling, is one of our great problems. It can only be met by the willing and active co-operation of the doctors in all parts of the province, and I venture to hope that, as time goes on, we shall build up with their help not only an efficient after-care system but a system also whereby the potential cripple will be "caught young" and saved much needless suffering.

I should like, before I close this report on the Queen Alexandra Solarium, to commend to your readers a consideration of this aspect of hospital administration, not only in the case of

children but for the adult patient. The burden of our city hospitals is great and increasing. Is there any good reason why this same policy should not be adopted in their case also? A hospital in the centre of population is a necessity. It is "a casualty clearing station" for acute illness, accidents, and operations, but would not "a base hospital" a few miles out of the city be the right place for the after-treatment? It would diminish expense, both to the hospital and to the patient; it would hasten recovery in many cases; it would permit of a far more extensive use of nature's methods of cure by open-air, sunlight, perhaps sea-bathing. The whole surroundings of the base hospital, if properly organized, with reasonable amusements and occupation, would hasten mental as well as physical recovery, and, by permitting greater activities of mind and body, to the exclusion of boredom, would encourage cheerfulness and hope, in place, too often, of depression and anxiety.

The following remarks by Lord Dawson at the annual distribution of prizes at the London Hospital will be read with interest by medical students as they enter upon their studies in our various Canadian medical schools. After paying a tribute to the late Lord Roseberry who had a few years previously delivered a noteworthy speech on a similar occasion, Lord Dawson went on to say: "Surpassing me as my predecessors have in most of their qualities, I have one unique advantage over them all, and that is that I am one of yourselves. I have trodden the same paths, made the same mistakes, carried through the same adventures, and offered the same excuses. I have also known what it is, in my student days, to be relatively prosperous one week and hard up the next. What a glorious time it was! Humanism and humour, and with it all an abounding vitality. The function of youth is to be young in fact, and it is equally the function of age to be young in spirit." The profession which they were entering called for a multiplicity of qualities. Great as was the importance of academic knowledge and training, there were other attributes which were required of the successful physician, including judgment, the faculty for decision, courage in taking risks, and the discipline which could

disregard the calls of selfishness and sloth. The work of the medical man was such as levied toll upon brain and heart at the same time. All schools and universities were fully alive to the importance of the extension of knowledge and the co-ordination of effort. But it was to the field of general practice that most attention must be paid. The general practitioner was the backbone of medicine. It would be a sorry day for this or any other country when general practitioners were weakened in their influence or their work. The general practitioner was a protection against the stunt specialist. It was to the interest of the community to identify the health of the people with the practitioner, and to give him a career. At the same time he urged the necessity of more institutional provision. He reminded the gathering of the changes in administration which would result from the operation of the Local Government Act, and advised the students and newly qualified practitioners before him to take a bold share in the shaping of the health policy of the country. The success of that policy would depend very largely upon the vigour and intellectual ability which the younger medical men now coming to the fore brought to bear upon it.

Case Reports

TERATOMA OR ENDOTHELIOMA

By H. W. COATES, M.D.,

Vancouver

On April 16, 1929, Mrs. S. A. R., aged 50, entered my office complaining of pain in the right great toe. On examination, I found the part more than twice the normal size, with a small but distinct discolouration near the tip. The swelling was confined entirely to the distal phalanx, and the toe was about one and three-quarter inches in thickness and one and one-quarter inches in width. There was marked evidence of fluctuation, and on close examination a linear furrow between the mass and toe proper could be made out on each side. There was little or no tenderness, except at the end of the toe, chiefly over the dark spot.

I had in mind to aspirate, but as the patient agreed to an operation, which I did the following day, I did nothing at the time but dress the toe and make her more comfortable.

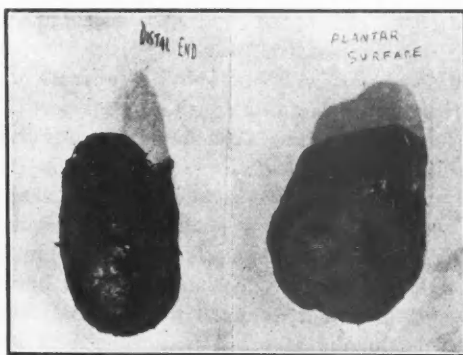
Her family history for tumour was negative. She had had two children.

About three years ago, the patient first noticed a swelling. This caused no pain at first, but later she had to wear old boots on account of the pain caused by new ones. The present shoes had been worn for two years. The uppers were of soft leather, and the part over the toe much raised from wear and pressure. There were callosities on both feet, particularly the left, at the bases of the metatarsal bones. She said that she had been a poor walker for a long time, having to stand on her feet a great deal during her work, and at the time of consultation could not have gone on another day. She was a woman of about 156 lb. in weight, looking and feeling quite well.

The growth was removed under 1 per cent novocain. The incision was made on the inner side of the toe, to avoid pain in the resulting scar. No trouble was experienced in enucleating the mass, as it was entirely encapsulated and seemed to rest on the flexor tendon of the toe. The dark spot appeared to be a hæmorrhagic

area in the growth, about one-quarter inch in diameter. This was the tender spot noted at the examination.

I tried to coapt the flaps without removing a portion. A slight infection followed, probably induced by retained clot, which however



FIGS. 1 AND 2.—Gross appearance of the tumour.

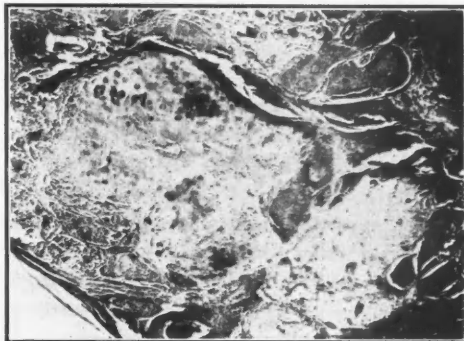


FIG. 3.—Microphotograph (X 30).

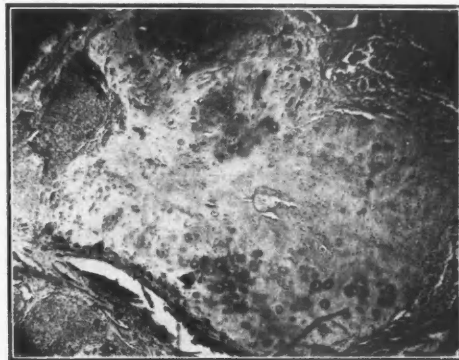


FIG. 4.—Microphotograph (X 50).

did not last long, and a very satisfactory result was obtained.

I herewith submit the pathologist's report:

"A rather ovoid, well circumscribed, tumour mass, weighing 15 grm. and measuring 4.3 by 3.2 by 2.3 cm. At one point, there is a slight protuberance of a hæmorrhagic appearance, but no loss of continuity of capsule. The whole has a rather reddish-grey to yellowish-brown appearance, and, on section, presents a mottled greyish-red, moderately firm surface, with here and there rather firmer, almost cartilaginous-appearing areas.

Microscopical Examination.—A number of sections were taken through the various portions of the tumour mass and they show a rather peculiar picture, chiefly notable for its lack of uniformity. There are areas composed of sheets and more or less solid phalanxes and insular aggregations of elongated, somewhat ovoid, cells of endothelial type, which are also seen lining larger and smaller, frequently sinusoidal, channels, the lumina of some being filled with red blood cells; others, with a more œdematous type of material, or lymph. Fairly dense bands of fibrous tissue traverse the sections, and here and there masses of well defined cartilage and myxomatous tissue are seen. In a few areas, chiefly in a rather myxomatous matrix, very large, round cells, with a pinkish, fairly abundant cytoplasm and well defined globular nuclei, not particularly chromatic, are also seen, resembling very large plasma cells, but possibly rather atypical endothelial ones. Endothelial elements certainly predominate in these sections, but with the cartilage and myxomatous tissue, one feels justified in regarding this as a mixed tumour, probably of the teratoma type, and evidently not malignant. Its location and composition would seem to place it in the class of what Sutton calls 'implantation dermoids'."

The illustrations of the tumour present a side and distal end; also a plantar view, the tumour being simply turned on its side, showing the rounded area which was tender on examination. The microphotographs clearly shows cartilage cells, and from this fact the growth may be considered a teratoma; in other respects it resembles an endothelioma.

I am indebted to Prof. F. Dickson of the University of British Columbia for the microphotographs and to Dr. H. H. Pitts, Pathologist, Vancouver General Hospital, for the above report.

SUBCUTANEOUS EMPHYSEMA IN ASTHMA

By H. E. MACDERMOT, M.D.,

Montreal

Subcutaneous emphysema is a rare complication of asthma, although one would expect it to occur not infrequently with the amount of respiratory effort that asthmatic patients undergo.

The instance I wish to record is that of a young man of twenty-two, who had suffered from asthma for about six years. Investigation showed this to be due to a ragweed sensitization, and this was confirmed by the history of his attacks. Desensitization was begun in the midsummer, but he did not keep up with the treatments, and only returned in late August when the asthma became severe. During a paroxysm of his dyspnoea he had felt some pain in the upper part of his chest and noticed that his neck began to swell immediately afterwards. He was admitted to the Montreal General Hospital, and it was then found that he had well marked subcutaneous emphysema in the tissues of the neck, extending upwards to the angle of the jaw and down to just below the clavicles. His chest showed nothing but the wheezings and pipings typical of asthma, and x-ray examination showed the lung fields to be quite clear. The presence of air in the subcutaneous tissues was noted in the skiagraph. His condition otherwise was perfectly healthy. He said he had had no complication of this nature before. The asthma subsided with palliative treatment and the emphysema disappeared in five or six days. A later attack of asthma, after discharge, was not productive of any further emphysema.

There seem to be only three other similar cases on record.^{1, 2, 3} It is worthy of note that they all were young people—one was a child of 8, the others were 17 and 25 respectively. In all of them the emphysema only occurred once, with nothing else to account for it except severe asthma, which in each case had been of some years' standing. In one instance² the emphysema extended from the face down over the thorax and arms. In no case was it necessary to do more than treat the asthma with palliatives.

My thanks are due to Dr. Grant Campbell for permission to publish the details of this case.

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A CASE OF PNEUMOCOCCUS MENINGITIS
DURING AN EPIDEMIC OF
POLIOMYELITIS

By SAMUEL MIRSKY, M.D.,

Ottawa

On September 4th, about 10 p.m., I was called to see H.B., seven years old. She was one of twins. Her family history was essentially negative, except that a baby sister of thirteen months was recovering from an acute discharging cervical adenitis.

There was nothing unusual in the personal history, the child having been in good health until the onset of her illness.

The illness was comparatively sudden in its onset. The child was perfectly well on the previous day, but on awakening on the morning of September 4th (the first day of school), she expressed a desire to stay at home. Her mother, noticing nothing unusual about her, sent her off to school. At noon, she preferred to lie down on a couch rather than eat her dinner, but her parents induced her to eat and she returned to school for the afternoon. At 3.30 p.m., she came home and again took to the couch. On her way home from school, a little girl friend quarrelled with her, and told her she was "The crankiest little girl she ever knew." There were no particular complaints, no vomiting, no headache. Her mother thought she was feverish, and for that reason sought medical advice.

The child was seen about 10 p.m. She was in bed, not very acutely ill, and replied to questions intelligently, but resisted examination. Her temperature was 102°; pulse 120; respirations 22. In the presence of the prevailing epidemic of poliomyelitis particular care was taken to discover evidences of the pre-paralytic stage of this disease. Her resistant attitude, however, made it impossible to say whether she had stiffness of the neck or a positive Kernig's sign. She did have a "strawberry" tongue and enlarged red tonsils. The ears were normal, and the rest of the examination was negative.

Symptomatic treatment was advised, and the child was seen again the next day, September 5th, at 1 p.m., as the mother felt "Helen was burning up." At this time the child appeared acutely ill; the temperature was 102°; pulse, 120; respirations 24. The pupils were active and equal. The neck was definitely stiff; Kernig's sign seemed positive. The knee jerks

were active. The rest of the examination, except for the redness of the throat, revealed nothing. A tentative diagnosis of poliomyelitis was made, and under ethyl-chloride general anaesthesia a lumbar tap was done. Bloody fluid was obtained, under markedly increased pressure, which on examination revealed a definite increase in polymorphonuclear cells (approximately 22); no increase in globulin; and Fehling's solution was reduced. The child was sent to the Isolation Hospital and was given 20 c.c. of poliomyelitis convalescent serum. That night her temperature was 104°. She was irrational, and the symptoms of meningitis were more manifest. There was slight retraction of the head and the Kernig's sign was definitely positive.

The next day, September 6th, a spinal tap was again done, but the fluid was again contaminated with blood. There were about 50 polymorphonuclear cells. The child was irrational most of the time; her pulse was rapid; and the temperature varied between 102° and 105°. She vomited all day, retaining very little fluids. There was no evidence of paralysis. The knee-jerks were active, and the child, on observation, moved all her limbs.

On September 8th, petechiae appeared on the lower extremities. The patient was quite irrational and hypersensitive. She refused nourishment, and what was taken was immediately vomited. Another lumbar tap was made and 15 c.c. of clear spinal fluid were withdrawn. The fluid was not under increased pressure. The cell count was 96, polymorphonuclear leucocytes predominating. Globulin was increased. Fehling's solution was reduced. A culture was sterile. No tubercle bacilli were found. It was considered that the child was suffering from a meningeal type of poliomyelitis.

The next night, September 9th, the child was unconscious and stuporous; there was definite strabismus, indicating paralysis of the ocular muscles. A lumbar tap at 9 p.m. gave about 25 c.c. of clear fluid, and, after temporary improvement, the child died September 10th at 1.45 a.m.

An autopsy was performed at the Ottawa Civic Hospital. Removal of the skull cap and dura mater revealed thick yellowish green pus over the temporal regions extending to the base of the brain into the foramen magnum. The pus contained pneumococcus, type II. The spinal cord was not removed, but no doubt the spinal

canal was blocked off at a level above the second lumbar vertebra. The heart and lungs were normal.

The case presents interest because of the disagreement between the usual laboratory and clinical findings, and also because it serves to emphasize how easily a specific meningitis may be overlooked in the presence of an epidemic of poliomyelitis. It also indicates how unreliable our statistics may be, for this case was considered as death due to poliomyelitis until the autopsy was performed.

A CASE OF ACUTE INTESTINAL OBSTRUCTION DUE TO CHOKE CHERRIES

By F. D. ACKMAN, M.D.,

Montreal

V. B., a boy aged 7, on July 31st of this year entered a competition with another boy to see which could eat the most choke cherries. In an endeavour to outstrip his competitor he neglected to discard the stones and rapidly swallowed the cherries whole, even including many of the stems. It is not recorded who won the contest! That evening the boy was seized with severe generalized abdominal colic, followed soon afterwards by nausea and vomiting. He was given a large dose of milk of magnesia, most of which was vomited later on. The next morning he had a small bowel movement, which however gave no relief. Colic persisted, all food and fluids were vomited, and he was confined to bed. By the next day prostration was marked, there was complete obstipation, and the vomitus had become dark brownish and foul-smelling. He was brought to the hospital on the morning of August 4th.

The patient presented an appearance of dehydration with deeply sunken eyes. He was intermittently vomiting small quantities of brownish faecal-smelling material. His temperature was 101° ; his pulse, 104; and his respirations, 24. The abdomen was distended throughout, but bulged particularly in the right lower quadrant. There was no respiratory movement of the abdominal wall, and rigidity was especially marked on the right side. In the lower half of the abdomen the outlines of coils of small bowel could be seen, particularly on the right. These were felt to

be filled with small, round, hard bodies like seeds. Tenderness was most marked in this region. An occasional peristaltic wave could be seen above the umbilicus. On rectal examination the loaded coils of small bowel were met with well down in the pelvis, compressing the rectum.

Attempts were made to relieve the obstruction by means of enemata. These being ineffectual an operation was carried out, after the administration of 20 per cent sodium chloride and glucose intravenously.

On opening the abdomen through a right rectus incision, the whole of the small bowel was found to be greatly distended. The last three feet of the ileum were purplish-red in colour, with congested blood-vessels and marked oedema, but the serosa was not dulled. This portion of the bowel could be seen to be tightly packed with the cherries as far as the ileo-caecal valve. Here the oedema and congestion were most marked. There were no adhesions, but the ileum was kinked by the weight of the cherries at its entrance to the caecum. The large bowel was collapsed. The peritoneal fluid was slightly increased and was slightly turbid. The ileo-caecal valve was so much narrowed by the oedema that cherry pits could only be expressed through it one at a time and with great difficulty at that. Enterotomy was carried out, an incision one inch long being made in the anti-mesenteric border of the ileum, twelve inches from the caecum. Through this opening approximately a pint of cherries and seeds was removed. For the most part the cherries were undigested, their skins being intact. Many of them had stems attached, and there were even a few small bunches. The colour and tone of the bowel showed almost immediate improvement after this procedure. The incision was closed, and the line of closure inverted. Three drains were introduced, including one into the pelvis.

Post-operative treatment included the further use of hypertonic sodium chloride and glucose intravenously, as well as saline subcutaneously. Enemata were effectual, and were kept up at intervals for three days. Recovery was prompt, and complicated only by a mild grade of peritonitis which cleared up rapidly. The patient left the hospital on the sixteenth day. His wound has entirely healed, and he has no undue symptoms.

Editorial

THE WORK OF THE AMERICAN COMMITTEE ON THE COST OF MEDICAL CARE

IT has been evident for some time, not only in Canada and the United States but also in Great Britain and other parts of Europe, that the relations between physician and patient, or, more correctly, between those agencies that undertake to provide medical care and the recipients of this benefit are becoming more and more strained. The general practitioner finds his sphere of operations encroached upon by hospitals, dispensaries, clinics, state and voluntary health organizations of many kinds, specialists, and irregular practitioners. The patient, on his part, bewails the inadequacy and the high cost of medical service. The physician is not always vocal on the subject, but the patient is not so restrained, and his complaint is aired in the newspapers or is brought to the door of the politician through resolutions of various social organizations. If the demand is loud enough, and particularly if any considerable number of votes is involved, the politician is likely to listen. The result is apt to be ill-considered legislation and action which will only intensify the dissatisfaction. The medical profession, therefore, will have to be on the alert and give effective expression to its views on the matter. Indeed, the problem of the cost of medical care is, as Olin West, the Secretary of the American Medical Association expressed it, "the one outstanding problem before the medical profession to-day."

The difficulties in question are the result of lack of co-ordination between the parties concerned and of the maladjustment of both to the rapidly altering conditions of life. Osler said that in little more than a century the medical profession "has done more for the race than has ever before been accomplished by any other body of men. So great have been these gifts that we have almost lost appreciation of them. Vaccination, sanitation, anæsthesia, antiseptic surgery, the new science of bacteriology, and

the new art in therapeutics have effected a revolution in our civilization to which can be compared only the extraordinary progress in the mechanical arts." The truth of this statement will not be denied. The difficulty has arisen from the fact that the benefits of all this advance have not been made generally available. The medical practitioner, after an arduous training, costly in energy, time, and money, is confronted with the prospect of receiving inadequate remuneration for his services. The patient, in accordance with the spirit of the age, which holds that "the best is not too good," demands the highest in medical skill and scientific equipment. Two classes of society may get these, the very rich and the very poor. The man in medium circumstances is the one who feels the pinch. At the same time, he seldom realizes that the cost of medical care has gone up inevitably, like the cost of living generally. The best in everything comes high.

About two years ago the Committee on the Cost of Medical Care came into being in the United States for the purpose of investigating the subject, with the hope "that it may be possible to work out plans for the provision of adequate and efficient therapeutic and preventive treatment for all the people, regardless of economic status, at a reasonable cost to the individual, which, at the same time, will give physician, dentist, nurse, hospital and other agents assurance of adequate return." Up to the present its efforts have chiefly been devoted to organization and the formulation of a program of studies. A beginning has, however, been made in the collection of essential facts. The committee has been carefully selected so as to include representatives of all the interests involved, and has associated with it a capable research staff. In its work it has had the co-operation of other bodies, among which are the American Medical Association,

the Metropolitan Life Insurance Company, the United States Public Health Service, and has been in conference with the American Dental Association, the Institute of Human Relations at Yale University, the National Drug Trade Conference, the National Committee for Mental Hygiene, the Social Science Research Council, and the National Bureau of Economic Research. The Committee has begun to issue its reports, but, wisely, has determined to make no recommendation until all the facts are before it.

Two of the Committee's reports have come to our notice. The first is, "The extent of illness and of the physical and mental defects prevailing in the United States," and the second, "A survey of statistical data on medical facilities in the United States." There is much valuable information to be obtained from these. Some of the chief points brought out may be referred to here.

The Committee's studies indicate that people are, on the average, disabled by illness at least once annually: men about once a year; women, from once to twice; and children, about twice per school year (180 days). The very young and the very old suffered far more frequently than persons in late adolescence and early maturity. On the basis of the *lowest* rate for disabling illness, as shown in the studies, there would be about 130,000,000 cases of disabling illness in the United States each year, and, if non-disabling illnesses be added this figure would be more than doubled.

In regard to the loss of time due to illness, the average for both sexes is nearly seven days per year. The data obtained indicate that the 36,000,000 wage earners in the United States lose at least 250,000,000 work days per year, and the 24,000,000 school children lose 170,000,000 days per school year. These figures take into account only one-half of the total population.

The most prevalent and serious disabling diseases, listed in order of their importance are: colds and bronchial conditions; influenza; digestive disorders; disease of the pharynx; larynx, and tonsils; non-venereal diseases of the genito-urinary system and adnexa; diseases of the skin and cellular tissue; "head-ache;" "rheumatism." The outstanding importance of the respiratory diseases is here made evident.

Statistics of deaths, while not such significant criteria of the extent of illness as statistics of illness, are still of importance. The groups of diseases that most often resulted in death, during the year 1927, were in order of frequency: diseases of the heart; pneumonia and influenza; cancer; nephritis; cerebral hæmorrhage and cerebral softening; tuberculosis; congenital malformations and diseases of early childhood; diarrhoea and enteritis.

The diseases that most frequently caused demand for the services of the general practitioner in rural districts were, in order of frequency: "colds," bronchitis, and "grippe;" digestive disorders; surgical cases (excluding gynæcological); neuroses, diseases of children (excluding communicable diseases, diarrhoea, and enteritis); tonsillitis; gynæcological cases; heart disease; arteriosclerosis; chronic arthritis. The following figures are illuminating. One person in every hundred places himself under the care of a doctor for syphilis or gonorrhoea. There are at all times approximately 700,000 persons with tuberculosis; 10,000 with pernicious anæmia; and 110,000 addicted to narcotic drugs; 1,000,000 cases of malaria; 36,000 cases of small-pox; 350,000 mental and nervous cases in hospitals.

Among pre-school and school children from 65 to 95 per cent have some form of physical defect. It is a striking thing to learn that 95 per cent of the children have some degree of hyperopia, myopia, or astigmatism, which defects are serious enough to require glasses in 34 per cent.

Special estimates place the number of mentally defective persons in the United States at more than 900,000; the blind at more than 100,000; the number of school children wholly or partially deaf, at 3,000,000; and those with major speech defects at 1,000,000.

There are, approximately 1,500,000 persons (estimated) employed in connection with the care and prevention of disease. Among these are: 143,000 physicians; 67,334 dentists; 200,000 trained nurses; 55,000 midwives; 100,000 pharmacists; 8,500 Christian Science practitioners; 15,000 chiropractors; 7,602 osteopaths; 500 naturopaths; 300 electrotherapists. Physicians have not been increasing so rapidly as population; dentists

have increased more rapidly; and registered nurses much more rapidly. Physicians and dentists tend to flock to the cities. The larger cities are over-supplied; the smaller towns and rural districts are under-supplied. At least 11 per cent of the active medical men, including those in government service, are on a full-time salary basis.

Hospital beds have increased from 421,000 in 1909 to 890,000 in 1928. There are 7,000 hospitals in the United States, caring for, on the average 700,000 patients each day.

Perhaps the most noteworthy feature here is the enormous multiplication of clinics maintained by hospitals, governmental and

private health organizations, schools and colleges, trade unions, courts and prisons, and charitable agencies. These have increased from about 600 in 1910 to almost 6,000 in 1926.

These statistics will suggest many lines of thought and are worthy of the earnest attention of the Canadian medical profession. Our problem in Canada is not very different from that elsewhere, and we should be facing it now. The findings of the American Committee will be of great use to us here and it is the intention of the *Journal* to make them public from time to time.

A.G.N.

THE COST OF MEDICAL EDUCATION

MANY and great benefactions have been bestowed upon medical schools of recent years. Splendid new buildings, lavishly equipped hospitals and laboratories, and much enlarged staffs, are being reported from many quarters. The medical course is being extended, elaborated and improved, and it grows more and more alluring to the ambitious student. Streams of gold are needed to make such things possible, and the glitter of the gold seems to be reflected from college hall and hospital ward, from class room and operating theatre. Young men and women by thousands leave the high schools so eager for a career in Medicine that the prospect of seven or more years of hard study in college and hospital does not deter them. There is no dearth of candidates for admission to the medical schools. Few schools are able to accept more than a fraction of the number who seek entrance, and thus dull tones appear in a picture which at first glance seems very bright. Happiness is for those only who can satisfy their ambition.

For many, a course in Medicine is now all but impossible, and the fear is being expressed that ere long none but rich men's sons can hope to enter the portals of our profession. The cost of medical education has already become very great. A minimum of two "pre-medical" college years and four years of professional study is almost universally required, and in several medical schools the

requirements are greater. The average age of those who graduated from American schools this year was 26.3 years, and most of the graduates had still to face a hospital internship of at least one year. Parents of moderate means may well hesitate about committing themselves to the many years of sacrifice which a medical education for their children now entails. The great benefit to medical teaching which has resulted from princely benefactions is unfortunately not an unmixed blessing. Many estimable people must assume a very heavy burden in order that sons or daughters may become physicians; many must deny themselves the joy of aiding their children in their cherished aspirations.

The present student body doubtless compares very favourably with that of any previous time, and we need not fear an inferior personnel for the profession of the future. But the spirit of our democracy ordains that the justifiable ambition of every high-idealed youth should be respected and encouraged, and that anything savouring of social preference is to be deplored. For this reason the profession will give cordial approval to any development which promises to lessen the expense of the medical course.

Reduction of fees would mean comparatively little. It is true that fees have advanced—from an average of \$118.00 in 1910 to an average of \$292.00 in 1929. The advance would have been much greater were

it not for liberal endowments, from which many of the schools derive the greater part of their revenue. The fees, however, represent but a small part of the students' outlay. Material relief can be given only by reducing the period over which studies extend, or by providing vacations at times when students can be most profitably employed at gainful occupations.

It is hardly possible to reduce the time acutally spent at medical studies, but it has been suggested that the summer vacation is unnecessarily long, and that if it were reduced to a few weeks the full medical course of the four-year schools could be covered in rather less than three calendar years. This plan would require some enlargement of the teaching staffs, which would entail either further endowment of the schools or another increase of fees, and would necessarily deprive the student of any time for earning. It would, however, reduce the student's period of dependency by approximately a year. In the case of the five-year schools, the gain would be greater. And if the plan were made applicable to the pre-medical years also, the gain would amount to nearly or perhaps quite two years. This plan, we understand, is to be tried by the medical

school of Duke University, now in process of organization.

Several schools have adopted the quarter system, in order, *inter alia*, that self-supporting students might be able to take vacation periods at times when they could obtain the most remunerative employments. These schools, already organized for all-the-year teaching, could readily adopt the plan which is to be put into effect at Duke University.

The attitude of the licensing bodies to this plan remains to be disclosed. Several of the American state boards of licensure have recently shown a disposition to allow the schools considerable latitude in the arrangement of the curriculum. Schools which do not provide adequate instruction are now few in number and can be kept under close observation, so that licensing bodies have less reason for rigidity than in the past. It may be expected, therefore, that they will show readiness to co-operate with the schools in reasonable efforts to find a way for worthy and promising young folk of limited means. The bars need not be lowered, but the needy aspirant may be assisted in surmounting them.

W. H. HATTIE.

THE ETIOLOGY OF ICTERUS NEONATORUM

FEW subjects have given rise to such diverse and contradictory views regarding its causation as has the temporary jaundice of the new born. The similitude of its early symptoms to those of serious, but fortunately rare, disease alarmed, but their early subsidence, without any serious developments stamped the condition as probably physiological, and dependent upon the important changes which take place in the circulation at birth. But notwithstanding repeated investigations during the past hundred years by leading pathologists and physicians in almost every country, no scientific explanation has until now been given.

Virchow was one of the first to attribute the icterus to the destruction of the red blood cells which were present in excess in the infant's blood at birth. This view, how-

ever, was gradually replaced by, or combined with, hepatogenous theories, which attributed the condition to excessive secretion of the liver cells or more or less blocking of the liver capillaries arising from the change taking place in the circulation, and possibly also stimulated by the entrance of food into the intestinal canal.

Recent advances in our knowledge regarding the formation of bile pigments and improved methods for testing their presence in the blood have thrown new light on the subject, and to-day the researches of Dr. Goldbloom and Dr. Gottlieb in the Royal Victoria Hospital in Montreal have given us our first illuminating explanation of the condition. For complete details of the several steps of this most interesting investigation we must refer our readers either to the original paper of these investigators,

which appeared in the *American Journal of Diseases of Children*,¹ or to the abstract of it which appeared in our issue of last month. At the present we desire merely to refer to the success of the investigations and to the completeness of the explanation as given by these investigators.

The first fact determined by them was the rapid hæmolysis which takes place in the blood taken from the umbilical cord of the new born, as compared with the hæmolysis which occurs in blood taken from the mother or from another individual. On studying the cause of this increased fragility, they found a direct relationship between it and the number of immature cells both of the reticulated and nucleated type of erythrocytes found in the infant's blood. Pursuing their investigations farther, the blood was examined for the presence of bile pigments, by the Van den Bergh indirect test and by the icteric index, using the Davis technique, and the presence of bilirubin was indicated in every case. Icterus, however, only develops in those infants in whom the tests indicated the presence of bile pigment in an amount of four units or more (Van den Bergh reaction). Goldbloom and Gottlieb, therefore, feel that new born infants cannot be properly divided into icteric and non-icteric cases. Icterus neonatorum must be considered a physiological condition present in all new born infants, and the development of visible icterus is subject only to the amount of hæmolysis taking place.

1. GOLDBLOOM, A., AND GOTTLIEB, R., *Am. J. Dis. Child.* 38: 57, July 1929.

With the disappearance of the immature reticulated and nucleated red cells in the infant's blood, hæmolysis ceases, and the icterus rapidly disappears from the infant's tissues. If there is any slight hepatic disturbance during these early days, there is no indication that it has any relation with the development of icterus. This must be regarded as entirely due to the hæmolysis of the immature cells.

Polycythæmia has for long been recognized as a development in the later months of pregnancy. Goldbloom and Gottlieb discuss the reason for its development and its rapid disappearance shortly after birth. In their view the fetus resembles an individual with congenital heart disease. Except for a small portion in the umbilical vein, there is no pure arterial blood in the fetal circulation. The fetus therefore lives in a constant condition of oxygen want. This oxygen want stimulates the production of blood cells, until birth takes place, when the anoxæmia, and therefore the necessity for polycythæmia, ceases and hæmolysis of the excess of erythrocytes begins at once and goes on rapidly. In conclusion, these investigators state that icterus neonatorum is a physiological condition which is the result of a post natal readjustment from an environment requiring the presence of polycythæmia for the maintenance of oxygenation to one in which no such extraordinary measures are necessary. Icterus is present in all infants, visibility being only a matter of degree.

A.D.B.

THE THERAPEUTIC DOSAGE OF GLUCOSE WHEN GIVEN INTRAVENOUSLY

INTRAVENOUS injection of dextrose solution is now in very general use as an important and valuable therapeutic measure in all conditions of exhaustion, toxæmia and dehydration. Indeed, in any serious condition demanding supporting treatment its administration would appear to offer that support in a form, and by a route, in which it becomes immediately available. This fact gives this measure a preference over almost all others. Unfortunately, the measure appears to be generally regarded as an equivalent of food and drink, and the exact dosage

and strength of solution has in consequence been only casually determined.

Although favourable results have been, as a rule, obtained from its employment, failures have occurred, and because of these failures and because occasional serious after-effects have been recorded, Dr. Titus and Dr. Lightbody¹ of the St. Margaret Memorial Hospital in Pittsburgh have carried out a series of experimental investigations with the object of estimating the

1. TITUS AND LIGHTBODY, *Am. J. Obst. & Gynec.* 18: 208, Aug. 2, 1929.

amount to be given at any one time, the strength of the solution, and the rate of administration to be employed to obtain the best results, and avoid unpleasant after-effects.

As a consequence of these investigations they state that the most favourable results seem to follow the use of strongly hypertonic solutions, as the interchange of glucose between the blood stream and the tissues is more rapid when a fairly concentrated solution has been employed. Their preference is for a 25 per cent solution. Nevertheless, the exact strength of the solution to be employed should depend on the condition of the heart muscle, and on the amount of dehydration in the patient. The rate of injection, and the amount to be given, should not exceed 0.8 gm. per kilo of body weight per hour. If given in larger amount, or at a more rapid rate, loss of sugar takes place through the kidneys. Thirty or thirty-five minutes, according to Wilder and Sansome³, whose findings they accept as correct, should be allowed for every 25 grams of sugar injected.

The quantity to be given as a single dose they regard also as important. Under-dosage, in their opinion, is a common fault, and this with a too rapid rate of injection accounts in their opinion for many failures. On the other hand, over-dosage, by over-stimulating the insulin-producing activity of the normal pancreas, may actually give rise to a condition of hypoglycæmia, especially if the injection is unduly prolonged. This paradoxical condition has been ex-

plained by Thalheimer² as due to over-stimulation of the pancreas. He found that even when he used the formula of Wilder and Sansome³, thus ensuring complete utilization of the glucose, the blood sugar readings showed at first a rise, then a stationary period, followed in time by a definite fall indicating that an excessive amount of the secretion of the pancreas was reaching the blood. Further injections of glucose may at this stage become dangerous and even convulsive seizures may be induced. These results, obtained by Thalheimer, were confirmed by experiments carried out by Titus and Lightbody in which the increase of the endogenous insulin was regarded as the important factor.

Although individualisation of the amount to be given and the concentration, of the solution to be employed, is always desirable, Titus and Lightbody state that in general a 25 per cent solution, with a total of 75 grams for an average sized man, given at the rate of 25 gm. every 30 minutes, gives the best results. Thus, for the total amount 90 to 100 minutes will be required. Half the amount may be given to a half grown child, and to an infant one quarter only of the adult dose, but the same length of time, namely 90 minutes, should be consumed in the administration. Other concentrations and lesser amounts may be used according as the case may demand, but in their opinion the above amounts represent a safe and adequate dosage for average individuals.

A.D.B.
2. THALHEIMER, W., RAINE, F., PERRY, M. C., AND BATTLES, J., *J. Am. M. Ass.* **87**: 391, Aug 7, 1926.

3. WILDER, E. M., AND SANSOME, W. D., *Arch. Int. Med.* **19**: 311, Feb. 1927.

PALÆOPATHOLOGY

THE study of the past is curiously fascinating, and for medical men in particular that branch known as palæopathology is by no means the least attractive. The word "palæopathology," perhaps it should be said, was coined by Marc Armand Ruffer, a distinguished pioneer and investigator in this special field, to designate the science of disease as it occurred in persons of ancient times. The study of any branch of knowledge for its own sake, though often at the present time decried, can always be justified,

but of palæopathology it may truthfully be said that it has practical applications transcending mere academic interest. The examination of animal remains, whether found in what may be called a "natural" condition, or mummified, or fossilized, has yielded valuable information as to the existence in past ages of not a few diseases that are prevalent to-day. Something, also, has been learned about the distribution of these diseases throughout the world. We may yet learn something of their origin, notably, in

the case of the infections. The demonstration of the existence in ancient times of certain developmental anomalies, such as achondroplasia, may, possibly, also be of use in unravelling some of the problems of inheritance. The discovery of certain intentional mutilations, evidently of a ritual order, such as the removal of a tooth or the terminal phalanges of a finger, throws some light on the customs and ethnological relations of primitive man. The state of the teeth gives some information in regard to diet and habits in ancient times. Besides these and such-like applications, the discovery of certain characteristics or peculiarities in the bony skeleton, the state of the centres of ossification, the evidence of injury, have proved of great value in identifying individuals, as was done by Elliot Smith in the case of the Pharaoh Amenophis IV, and by McGee with Francisco Pizarro.

An immense amount of work has been done in connection with the scientific study of the human remains that have come down to us from ancient times, not only of the bones but of the softer parts, and the application of modern histological methods has produced valuable results, even from this unpromising material. Elliot Smith, for example, has examined about thirty thousand Egyptian and Nubian bodies, and F. Wood-Jones has reported on about six thousand more. Other work has been done in France and Germany, and in the United States, in the last mentioned country notably by A. Hrdlicka, G. G. MacCurdy, and H. U. Williams. The results of these investigations, however, have been published in several different languages and in many journals, so that they are not readily accessible.

An interesting sidelight is cast on this subject by the discovery of certain mural carvings and paintings, as well as statuettes, depicting pathological conditions, which date from remote times. These have been dealt with at length by Paul Richer and others. The cave men of the reindeer period (from about 15,000 to 30,000 years ago), as is well known, were no mean artists. Their drawings and paintings, found chiefly in southern France and northern Spain, are quite admirable. While they usually depict battle or hunting scenes, or the various animals

familiar to them, occasionally other subjects are portrayed. Thus, a few pictures of human beings have been discovered, usually in the form of steatopygous females (ironically called "venuses"). While not flattering to the race, these representations are the oldest known portraits of human beings, and were, no doubt, drawn from life. Steatopygy is met with to-day in the females of the Hottentot race, in whom it is considered to be a mark of beauty. The evidence afforded by these drawings, together with certain negroid peculiarities present in the skeletons of some of these early peoples, notably the Grimaldi man, have suggested to anthropologists that these particular peoples may have been akin to the modern Hottentot, and may have migrated from Africa to Europe.

Mutilating the hands by amputation of one or more fingers is a curious practice found among more than one primitive race. This, also, has been depicted by the cave artists.

Coming to much later dates, Ruffer has given illustrations, taken from Egyptian monuments, of not a few pathological states, notably among them, achondroplasia, 5000 years ago; talipes equinovarus, 4000 years ago; Pott's disease and rickets, 4000 years ago. Slomann, also, has reproduced figures taken from Egyptian art, which, he believes, represent Pott's disease of the spine, kyphosis from rickets, achondroplasia, congenital dislocation of the hip, and what is very probably atrophy of one leg, the result of poliomyelitis. In America the artistic efforts that sought to depict diseases are mostly to be found in pottery. Hump-back, amputations, the results of surgical operations, dwarfism, congenital malformations, and ulceration, are vividly dealt with.

In a recent publication, entitled "Human Palæopathology,"¹ Prof. H. U. Williams, of the University of Buffalo, has done excellent service in bringing together the outstanding facts in this interesting subject. He has analyzed the available material and has given us an extensive bibliography. From a perusal of his valuable study certain facts stand out with some clearness.

Professor Williams says that he does not

1. WILLIAMS, H. U., *Arch. of Path.* 7: 839, May 1929.

know of any published case that can confidently be pronounced syphilis of bone, and that is known to ante-date the year 1500. Tuberculosis has been identified, with a considerable degree of probability, in certain Egyptian mummies belonging to the period between 2700 and 1100 B.C.

A relatively common condition among the ancient peoples of America, though probably also occurring in Egypt, is what is called symmetrical osteoporosis of the skull. This is not unlike gummatous inflammation, but is probably not of syphilitic origin. It may be akin to rickets, scurvy, or what occurs in certain anæmias of children. The affection is rare at the present day.

Rickets, at least so far as the absence of the usual lesions would indicate, was rare in ancient times. Arthritis deformans (using that term in a somewhat wide sense) afflicted the peoples of the eastern and western hemispheres at least as often as it does the peoples of to-day. Smith and Dawson state that rheumatoid arthritis was *par excellence* the disease of the ancient Egyptians and Nubians. It was common also in western Europe in the neolithic period, during the bronze age, and in Roman times. It is prevalent in Egypt at the present day.

Arteriosclerosis was as common in ancient Egypt as it is now.

Anthraxis and silicosis of the lungs have frequently been found in ancient bodies. A single case, or at most two or three cases

of pneumonia, pleural adhesion, cirrhosis of the liver, biliary and urinary calculosis, appendicitis, and gout, have been recorded.

Small-pox was the probable cause of certain lesions of the skin found in Egyptian mummies dating from 1250 to 1000 B.C.

Schistomiasis, a disease extraordinarily prevalent in Egypt to-day, was existent in 1250 to 1000 B.C. as was demonstrated by Ruffer, who found the eggs of *Schistosoma* in the kidneys of two mummies of the twentieth dynasty.

But little can be stated with certainty in regard to the prevalence of tumours in ancient times. Small osteomas were not rare, but osteosarcoma probably was so. The relative frequency of carcinoma cannot be inferred from the existing evidence.

The teeth of ancient peoples were worn down, probably from the use of coarse food mixed with grit, more than are those of the modern time. Dental caries is said by some to have made its appearance in the neolithic period; pyorrhœa, apparently, has been found in Neanderthal man. In general, it seems to be agreed that dental caries has become more common with the advance of civilization.

Much has been done in the field of human palæopathology already, but probably, when all the available material is properly investigated, even more striking information may be elicited.

A. G. N.

Editorial Comments

THE DISCOVERY OF THE ITCH MITE

The fact that scabies is a disease caused by a visible parasite is now beyond all dispute. We are reminded by Dr. Montgomery, however, in an interesting essay entitled "The Controversy over the Itch Mite,"* that it took much battering against the door of prejudice for this truth to be finally ushered in by Alibert in 1834. Even the obvious contagiousness of the disease had been disregarded, because it did not fit in with the theory that all cutaneous eruptions were a result of depraved humours of the body. The fact that the itch mite usually has cocci associated with it which give rise to confusing symptoms was accounted for by saying that the more

symptoms there were the more complex must the humoral disturbances be.

Like many other discoveries the cause of scabies had been discovered long before it came to be generally accepted. Rabelais and Ambroise Paré, for example, attributed it to an insect three hundred years before Alibert's time, and the peasantry and lower classes were quite aware of the fact, because they could extract the mite from their own skins. Alibert knew of these things, and he was therefore quite ready to accept the observations of one of the workers in his clinic who said that he had found the acarus in some of the patients. A drawing of the insect was made in Alibert's atlas, and the discovery made a great stir in dermatological circles. Then others tried to find the mite themselves but could not, probably because they looked for it

* *Arch. of Derm. & Syph.* 20: 2, Aug. 1929.

in the vesicle instead of in the burrow. Finally, it was found that the figure in Alibert's atlas was that of a cheese mite (said to have been introduced under the microscope as a practical joke), and soon the whole discovery was discredited and Alibert was held up to ridicule. One of the Parisian dermatologists, Ingol, scornfully offered 300 francs reward for the demonstration of the real insect, and even Hebra at that time added his voice to the general chorus of derision. Alibert stuck to his point, however, and had his reward in 1834 when Renucci succeeded in properly demonstrating the acarus in its burrow, picking it out, and setting it to crawl around on his thumbnail. He had learnt how to do it from the peasant women of Corsica. Alibert immediately announced that he would take no summer holiday, and Renucci won Ingol's 300 francs, and a gold medal.

All of which shows how important it is to acknowledge facts, even when, or, especially when, the voice of theory is loudest and most insistent in a different direction. H.E.M.

A STUDY OF MEDICAL PRACTICE IN CANADA

The Canadian Medical Association has undertaken to study more thoroughly the conditions underlying medical practice in our country. The importance of getting full information on this matter should be self-evident. At the present time, as most are probably aware, there has developed an ever widening gap between the physician and the patient, and if this gap is to be lessened or bridged over it will be by the exhibition, on our part, at least, of tact, patience, and altruism, based upon accurate knowledge. This knowledge our Association is endeavouring to obtain. Will you help? A questionnaire has been prepared and sent out to the profession, dealing with local conditions of general practice, hospital service, and the efficiency or otherwise of current medical teaching, among other questions. The questions deserve an answer. In fact, the very well-being of the Canadian medical profession depends upon our response. The *Journal* regrets that the questionnaire did not reach it in time to be noticed in the last issue, but desires to call special attention to it now. Questionnaires frequently make their way to the waste paper basket in these busy times. They are, doubtless, somewhat of a nuisance, but, if evil, they are often a necessary evil. This is one of the times when a questionnaire should not be ignored. If any of our readers have not returned this particular document they are urged to do so at once. In the United States they are well away to a good start in the investigation of many questions involving the relations that exist between doctor and patient. Many basal conditions must, of course, first be studied. The

same problems that are insistent in our neighbourhood to the south are insistent in Canada. We should not delay our own investigation. Carefully considered replies to the questionnaire will lay bare some of our difficulties, and will, doubtless, provide a basis for further study. A.G.N.

CANADIAN MEDICAL AUTHORS

It is a matter worthy of particular note that Canadian medical workers are coming to assume their rightful place in the world of literature. We have always been justly proud of our medical schools. The *Journal* is showing in increasing measure what our medical profession is thinking and doing. Canadian medicine, indeed, is well abreast of the times. It is fitting, therefore, that the accumulated wealth of experience should not be buried or wrapped in a napkin, but should be broadcast for the benefit of all. This can be done efficiently through the medium of books.

Not many months ago we welcomed the appearance of Dr. J. J. Heagerty's important and learned work on the history of Canadian medicine, a work which will for long be a mine of information on this subject, and Professor Oertel's admirable "Outlines of Pathology." Other treatises that should not be forgotten are Dr. Alan Brown's "The Normal Child; its Care and Feeding," Dr. Helen MacMurchy's "The Canadian Mother's Book," and Dr. Alton Goldbloom's "The Care of the Child." In our November issue, also, we received a book which is of great value to those interested in the legal side of medicine, particularly in connection with the working of Workmen's Compensation Acts, "Trauma, Disease, Compensation," by Dr. A. J. Fraser, of Winnipeg. The latest to appear is "Surgical Diseases of the Thyroid Gland," by Dr. E. M. Eberts, of Montreal, who has had wide experience and is a recognized authority on his subject. We understand, also, that there is shortly to be published a notable book on "Fractures and their Complications," by Dr. George E. Wilson, of Toronto, which will be profusely illustrated with skiagrams, and cannot fail to be a valuable addition to our knowledge of this important part of surgery. These Canadian authors deserve well of their profession. They should be encouraged, not only for their own sakes but in the hope that their good example may stimulate others to go and do likewise. A.G.N.

STUDIES FROM THE CONNAUGHT LABORATORIES

"Studies from the Connaught Laboratories of the University of Toronto," is a well printed octavo volume of 330 pages issued by the University of Toronto Press, containing reprints of the scientific papers, forty-two in all, contributed to medical literature by members of the laboratory staff during the past two years.

All of the papers represent original investigations of value. Their collection in one volume is for every reason desirable, as they in this way become an excellent exponent of the research work carried on in a Canadian university. We personally regret that such a large proportion of these papers made their first appearance in foreign journals, and we look forward to the day, when work carried out in Canadian universities, established and supported by Canadian funds, will make their first appearance in a Canadian Journal of Science printed in Canada.

A.D.B.

THE ARCHIVES OF DISEASE IN CHILDHOOD

We desire to acknowledge the receipt of the last number of the *Archives of Disease in Childhood*, edited by Drs. Hugh Thursfield and Reginald Miller. Established four years ago by the British Medical Association, this Journal is rapidly taking its position as an important exponent of British pædiatrics. The present number contains one hundred pages of reading matter. The articles are all of a high class, scientific, and at the same time practical in character. Among its contents we note the following articles: The Leucocyte count in Rheumatic Disease in Childhood; Congenital Valvular Obstruction of the Urethra with illustrations; Acute Sensitization in an Infant to Cow's Milk Protein; Studies of Pneumonia in Childhood; The Bacteriology of the Broncho-pneumonias of Children; the Value of the Cardiac Clinic and Hospital, in the Control of the Rheumatic Infection; Tonsillectomy in the Prevention and Treatment of Rheumatism; Pulmonary Embolism in Childhood; Changes in the Blood Chemistry in Congenital Hypertrophic Pyloric Stenosis and their Clinical Significance. The Journal is printed on excellent paper, the type is pleasantly clear, and the illustrations unusually good. The Journal can be recommended to all pædiatricians in Canada who desire to keep in touch with the advance made in this specialty by members of the British profession.

A.D.B.

SIR T. JENNER VERRALL, M.R.C.S., LL.D.

*Late Chairman of Representative Body,
British Medical Association*

The profession in Canada will learn with deep regret of the death on October 4th of Sir Jenner Verrall, who for many years took a very prominent part in the Councils of the British Medical Association, and who, in 1924, was deputed by it to attend the annual meeting of our Association in Ottawa, and make arrangements, in conjunction with Dr. Alfred Cox, its Medical Secretary, for our affiliation with the parent Association.

Sir Jenner Verrall was born in 1852 and belonged to a family which had been continuously associated with Sussex public affairs for generations. Educated at first at a private school, and later on at Marlborough College, he began his medical studies in Sussex County Hospital and completed them at St. Bartholomew's. He commenced his practice in Brighton as a surgeon and was soon recognized by his colleagues as a good clinician, and successful operator. He had keen literary tastes, and was well read, and his scholarship revealed itself in everything he spoke or wrote. His home training and personal character had inclined him to take a serious view of the responsibilities of life and avoid its frivolities, so that in all his work he set for himself a high standard and acted up to it.

He retired early from active practice and settled in Bath, where he devoted his energies to further the public interest, and to the service of the British Medical Association. Regarding his services the *British Medical Journal* remarks that a man of Verrall's outstanding character and gifts would have made his mark in any walk of life, and it was fortunate for the Association that from an early stage in his career he chose to identify himself with its organization at first, as secretary of the South Eastern Branch; later on, after his retirement from practice, as member of the General Council, he devoted himself unreservedly to the service of the Association. No member in their recollection was ever called upon to serve in so many capacities. Whenever a big project arose, an urgent public question demanded adjustment, or delicate negotiations had to be undertaken, the natural thing was to put Verrall on the Special Committee. Many Canadians will remember his eloquent speech at the annual dinner of our Association in Ottawa when he replied to the toast of the British Medical Association. His genial courtliness at that meeting made many friends, and it was the general hope that he would again take part next year in the Winnipeg meeting.

Although he had been in poor health for sometime, his mind was clear and alert and it was with deep feelings that at the Manchester meeting he felt it to be his duty to resign from all active work on the Councils of the Association. His resignation was accepted with regret, and a motion was passed not only unanimously but with acclamation, recording the high esteem in which his services were held, and expressing the hope that his life would long be spared to the Association for counsel, for inspiration, and for leadership! Of him it may be said, as it was of another famous member of our profession—*Non sibi sed pro bono publico vixit.*

A.D.B.

Professor A. T. Bazin, *President of the Canadian Medical Association*, writes as follows:

Sir Jenner Verrall was an outstanding example of unselfish devotion to public service, performed in a most modest manner.

His analytical mind drove straight to the centre of a problem; his logical argument seldom failed to convince.

As an ardent student of nature and of books he was a delightful companion, his enthusiasm being restrained and lasting, rather than lost in effervescence.

He will be sorely missed when next we visit England.

* * *

Dr. W. Harvey Smith, *President-Elect, Canadian Medical Association*, sends the following appreciation:

It was with a keen sense of personal loss that the medical profession of Winnipeg learned of the death of Sir Jenner Verrall. He visited Western Canada with Dr. Alfred Cox, the Medical Secretary of the British Medical Association, in 1924, to investigate the conditions, and ascertain at first hand whether adequate facilities existed for holding an annual meeting of the Association. His charm of manner, distinguished bearing, and friendliness, endeared him to all who were privileged to meet him. In his passing the medical profession of the Empire lose an inspiring, wise leader, and a cultivated gentleman.

For some time prior to his visit it was evident that the British Medical Association had only a feeble hold in Canada. Out of a total of 9,000 physicians only 374 were members. This was a source of sincere regret to British and Canadian medical men on account of the strong economic and sentimental ties that existed between the two countries. The extraordinary growth and vitality displayed by the Canadian Medical Association, following a radical change in management and policy that went into force in 1922, rendered extension and development of British medical branches impossible. Recognizing the condition that had arisen, the British Medical Council took steps to strengthen the enfeebled bond that existed between the two countries, by suggesting, in the words of Dr. Cox: "A marriage between the two associations, with the word 'obey' left out." After months of negotiation it was decided to send representatives to Canada, to discuss affiliation with the Council of the Canadian Medical Association. In the appointment of Sir Jenner Verrall, no happier selection could have been made, as he brought to the conference authority based on wide experience, finesse, and radiant geniality.

The strength of his argument in the main lay in his appeal to sentiment, and the insistence that affiliation from the Imperial point of view was a matter of vital importance. In reporting

the results of his visit to Canada to the British Medical Council, he said: "What did the proposal amount to? In the first place, it was a matter of sentiment, a thing by no means despised, for in spite of what scoffers said, sentiment largely ruled the world." And again: "Another point was that the Association had done this thing not one minute too soon. They were welcomed—in Canada—not only as members of the medical profession, but as members of the British Empire, and were astonished at the extent of the affection that existed between Canada generally, and the home country." His statement that "Canada did welcome any evidence that she was not forgotten by the home country, and fully intended to remain part and parcel of the British Empire," must elicit a responsive note in the heart of every practitioner in this broad Dominion.

The world is poorer indeed, by the death of this great citizen of the Empire, and distinguished member of the British Medical Association, who made such a notable contribution towards re-establishing ties of unity and fellowship between the medical professions of Great Britain and Canada. By every Canadian who had the honour of meeting him, his name and fame will long be held in remembrance.

HEDYOTIS AURICULARIA

In the November issue of the *Journal* (p. 591) we commented on a new remedy for dysentery—Hedyotis Auricularia, which was brought to our attention by Capt. P. R. Bhandarkar. We have just received a preliminary report on the subject issued by the Pharmacological Research Institute of Madras, being a paper read before the South Indian Medical Union, Madras, by our correspondent. Nineteen cases are detailed and while they will not all stand scientific scrutiny there is sufficient evidence adduced to warrant a thorough trial of the new drug. A fluid extract called "Hedaurin" is on the market, prepared by the Pharmacological Research Institute, Madras. The dose is one drachm every four hours, for adults. Steps are being taken to have the remedy tested out on this side of the water. Those interested here may have samples of the preparation free on application to the Institute at Madras.

A.G.N.

ERRATUM

Dr. F. W. Leech writes us that, through an oversight on his part, an error has crept into his paper entitled, "The Advantages of Preliminary Examination and Preparation of the Surgical Patient", which appeared in the October issue of the *Journal*. On page 416 the formula for Moot's rule is given as

$\frac{\text{Diastolic Pressure}}{\text{Pulse Pressure}} \times 100$. This should have read,
 $\frac{\text{Pulse Pressure}}{\text{Diastolic Pressure}} \times 100$.

Special Articles

ON THE FUNCTIONS OF THE SKIN AND THEIR IMPORTANCE IN THE MAINTENANCE OF HEALTH

By A. D. BLACKADER, M.D., LL.D.,

Montreal

Professor H. W. Barber, of Guy's Hospital, in the Lettsomian lectures of this year before the Medical Society of London,* called attention to the part played by the skin in the biological activities of the body, and to the significance of its disorders in general medicine.

Our knowledge regarding the functions of the skin and their importance for the well being of the general system has become much more complete of late years. No longer is the skin regarded as a mere protective covering for the internal organs—a buffer between the organism and its environment—but as a vast area of sensitive nerve terminals having close connection with the vegetative nervous system and the endocrine glands, and through them determining the reaction of the various organs of the body to external influences, such as cold, heat, light, and many forms of trauma.

It is through the medium of these nerve terminals of the skin that the influence of the varying climatic conditions on the thyroid-adrenal-autonomic system is exerted, and it is upon the activity of this complex system of nerves and glands that our sense of well being, our energy, and our resistance to many bacterial infections is in great measure dependent.

Cramer (quoted by Barber) has shown that heat regulation is a function of this endocrine sympathetic system, the normal stimulus to which is the action of cold on the skin. Under this stimulus the adrenals and the thyroid undergo striking histological changes indicative of great activity. Contrariwise, in a tropical temperature these glands become more or less inactive, metabolism is lowered, and physical and mental activity depressed. Too prolonged exposure to cold, however, acting through the skin on this system, leads to great impairment of its activity; the liver is depleted of its glucose; heat production is diminished or entirely fails; great heat loss occurs, and the condition finally ends in death, if the cold be too intense or prolonged.

Still further, Barber quotes Cramer to the effect that man in his comparative hairlessness must have originated under tropical conditions. It was only when, wandering northward, primeval man felt the chilling northern blasts, that

his inventive faculties were stimulated to discover efficient means of obtaining warmth and protection. Barber adds that it is not too much to assert that it was owing to the potent influences exerted through the medium of his skin that the evolution of civilized man took place. Undoubtedly, temperate climates, owing to their constant air movement and moderate changes in temperature, stimulate in a marked degree this endocrine sympathetic system, thus promoting both physical and mental activity. Man, however, has not limited his wanderings to moderate climates, but by means of clothing and artificial sources of heat has been enabled to secure comfort, and do efficient work in climates where the external cold would have prevented many activities, and might even have threatened life.

Unfortunately, owing either to the failure, or to the abuse of these means of obtaining warmth and comfort, many live under conditions which favour the development of disease. The evil effects of overheated rooms on physical energy, and the power of resistance to microbial infection, have been fully demonstrated by experiments of the New York State Ventilation Commission. This commission found that even slight over heating (75° F.) throws a burden upon the heat regulating system of the body, inducing a marked decrease in general vasomotor tone, a condition greatly favouring bacterial invasion. Similarly, the mistaken fear of "catching cold" has robbed the body of another of its chief mechanisms against infection, namely, the action of cool breezes and light upon the skin. It is a depressing reflection for us as medical men that we spend the greater portion of our energies in endeavouring to cope with morbid conditions of man's own making. The ancient Egyptians, Greeks, and Romans appear to have been cognisant of the beneficial action of sunlight and cool air upon the skin, as well as of physical exercises in the open; advantages which modern civilized nations are only beginning to prize. Excessive clothing and artificial heat, are, to-day, militating against the health and physical development of a large portion of the population in many countries.

Professor Barber went on to say that of all the climatic factors influencing the human organism the rate and temperature of air movement, and the amount of solar radiation are the most important. A stagnant atmosphere and excessive clothing are now recognized as injurious factors in the maintenance of health. The action of sunlight, and especially of its ultra-violet rays, is mainly on the skin, and

* *The Lancet* 2: Aug. 24, and Sept. 7, 1929.

appears to be bound up with epidermal pigmentation, as the result of which the development of vitamins takes place, which have also a direct action on the activity of the sympathetic nervous system and the adrenal glands.

In conditions in which these important climatic factors are defective or altogether absent, not only do we meet with a lessened power of resistance in the skin to the invasion of foreign organisms but certain disorders of metabolism are induced which permit organisms originally saprophytic and harmless to develop pathogenic properties.

The normal clean skin, he said, is, contrary to general opinion, remarkably amicrobial. The intact, healthy, horny layer, although it may harbour organisms on its surface, is rarely penetrated by bacteria, although a few cocci may sometimes be found at the entrance to the pyloseaceous follicles. Normal sebum is composed of neutral fats and fatty acids in combination with cholesterol. These cholesterol fats are not easily decomposed by bacterial growth, and do not form a favourable culture medium. Under unhygienic conditions of life this sebum may become excessive in amount, and definitely altered, producing an environment in which the previously harmless saprophytes become pathogenic and induce definite skin disease. Dermatologists have referred to this condition as a seborrhoeic state. Vigorous outdoor exercise with light clothing in cool air and bright sunlight plays an important part both in its prevention and treatment.

In his second lecture Professor Barber discusses the significance of the various exanthems which appear in the course of many systemic infections, referring especially to tuberculosis, syphilis, rheumatism, and certain streptococcal infections, such as erythema nodosum and erythema multiforme, but not including the exanthems of the specific fevers usually grouped under the name of the exanthemata.

The essential factors, in his opinion, for the production of these eruptions are the sensitization of the cutaneous or subcutaneous tissues, and the access to them through the blood stream of the specific antigen, producing circulatory stasis in certain areas; also the action of physical agents such as light, heat and cold. He emphasizes the importance of an impaired function of the skin as a predisposing factor in the development of these infections, and, in conclusion, raises the interesting and important question of how far the cutaneous manifestations of these infections constitute a protective mechanism against the invasion of the deeper and more important organs. The evidence in favour of this view is, in his opinion, very strong. The popular conception of most skin eruptions is that they represent an effort to drive out some poison from within.

We should not be too ready to dismiss this idea as an ignorant superstition. Brocq has long upheld the view not only that certain skin eruptions alternate with various visceral and nervous disorders, which Professor Barber regards as an indisputable fact, but also that the successful treatment of the disorder in the skin may precipitate an attack in the latter. In tuberculosis it has long been recognized that patients who suffer from tuberculides and lupus vulgaris are comparatively immune to the more deadly forms of this disease. Moreover, when the severer forms of visceral involvement or a general miliary tuberculosis supervene in a patient with tuberculides or lupus the skin lesions automatically disappear, and the von Pirquet reaction vanishes with them.

In syphilis it is common knowledge how seldom tabes and general paralysis occur in those who have had severe cutaneous manifestations. Years ago, when investigating the histories of a large number of tabetics, Prof. Barber was struck by the fact that few of them retained any recollection of a syphilitic eruption.

Lastly, the eruptions due to the streptococci appear frequently to act in the same protective rôle? There are many physicians who base their opinion that erythema nodosum is not a rheumatic disease on the fact that it is comparatively seldom associated with any permanent lesion of the heart, or with chorea. Such physicians, Barber believes, fail to grasp the whole story of rheumatic infection, or to understand the significance of its cutaneous manifestations. One might equally well argue that gummata are not syphilitic because they so seldom occur in tabetics or paralytics and vice versa. That erythema nodosum is sometimes associated with typical rheumatic fever and its cardiac complications is also certain. That the association is not more frequent is, in Professor Barber's opinion, owing to the protection given by the allergic state of the skin to the more vital organs. In closing his address, he draws the following conclusions; that certain cutaneous manifestations of these three infections are comparable and sometimes indistinguishable, and that they depend on an allergic condition of the skin. This allergic condition of the skin is to some extent a protective mechanism against involvement of more vital organs, and any interference with the normal physiological functions of the skin, such as is bound to occur in the majority of persons living under civilized conditions, is an important factor in predisposing to active infection with certain organisms, such as those responsible for acute rheumatism, or the tubercle bacillus, and with the common saprophytes of the skin and mucous membranes.

PATIENTS AND PHYSICIANS

BY A. D. BLACKADER, M.D., LL.D.,

Montreal

The addresses delivered at the opening of the medical schools in England are always instructive. Two of them, this year, contain much good advice stated in such a bright way as to make pleasant and interesting reading.

At Birmingham Sir Farquhar Buzzard opened the Medical School with an address on "Arrogance and Ignorance in Medicine."* He began his remarks with the statement that we cannot blind ourselves to the fact that the profession at the present day does not hold the respect of the public that it should have. We are blamed for our conservatism and our trade unionism, and accused of being too cocksure, and inclined to treat our patients as if they were fools, and to lay down the law as if medicine was infallible. The young physician removed from his hospital finds himself flung into practice in a contradictory world, where he is called upon to discuss medical methods and measures with laymen who are ignorant of the scientific truths he has been storing up during his many student years, and he grudges the time he has to devote to listening to and questioning his patients. If he is unwise and impatient he will evade this inquisition, ask few questions, and turn a deaf ear to stories which may prove gold mines of information. Unfortunately, by doing so he closes the door on the possibility of establishing that mutual confidence between doctor and patient which is essential to successful practice. Medicine, year by year, is becoming more scientific in its methods of investigation, but no medical man can afford, and the profession cannot afford, to neglect the art of tactful questioning and of listening. Skilful cross examination will often define and thus limit the field of the necessary physical and chemical examination demanded. But this undoubtedly demands time and perseverance. Too often what the doctor wants to learn, and what the patient thinks the doctor wants to learn are very different matters. The doctor may readily earn a reputation for arrogance if he cannot conduct his cross examination with tact as well as with intelligence."

Discussing the charge of ignorance, Dr. Buzzard said that our knowledge is too often measured by our ability to cure, and because we can cure neither cancer nor a common cold our critics assume that our ignorance of both conditions is something of which we may well be ashamed. We may, however, put up some measure of defence. The criticism is based on an assumption, a relic of mediæval belief, that while there are many diseases, there is a cure for every

one of them, if we are clever enough to find it. The more we know of disease the more does this statement appear to lack foundation. On the other hand, the claims for the prevention of disease are becoming daily more firmly established, and the future of medicine surely lies in that direction.

We need not, however, fret, he said, about the fact that we cannot cure all disease. That is a claim we may well leave to quacks and charlatans, who will always find a public ready to believe them, and it should be the aim of the profession to make our methods of practice and our claims so different from those of quacks that the public should have no difficulty in distinguishing them. Unfortunately, therein we often fail. How often do we see the profession taking up and following like a flock of sheep each new cure-all that is offered to it? Sour milk, hormones, all forms of electricity, and lastly ultra-violet rays, to mention only a few, have all been exploited by the profession with so little discrimination that the public fails to distinguish between qualified and unqualified practice. Without careful diagnosis and without dignity doctors have applied such measures, each in its turn, to every known ailment, with the result that our wisdom and our honesty as well as the merits of the curative agent itself have often become discredited.

Another aspect of our ignorance, according to the speaker, was the fact that the psychological side of our work does not receive the attention which is its due. Every patient is an individual with his own idiosyncrasies and with his own reactions. We are accused of treating every one in the same way, as if no differences existed. The art of recognizing the special features of each patient is not an easy one to acquire, but the doctor who fails to make use of it may be regarded as arrogant and frequently as also ignorant. Criticisms such as these, however, are levelled at professional practice as a whole, rather than at physicians individually, each of whom has it in his power to earn the respect, gratitude and affection of his patients.

The personal status of the doctor depends not so much on his actual knowledge, or on his manner, as on his willingness or unwillingness to place all his resources at the disposal of those who seek his help. If I were permitted, he said, to coin a motto appropriate alike to the consulting room and the surgery it would be "Give and do more than is required of you". To attain its rightful position our profession must cease to profess to cure and be content to show the public that its knowledge and experience, limited as they yet must be, are assets of great value on which reliance can be safely placed.

At St. George's Hospital School Dr. Edmund Spriggs chose a similar subject for his address; that of "Doctor and Patient: an Experience."

* *The Lancet* 2: 695, Oct. 5, 1929.

After remarking that he hoped those entering upon practice to-day might be able to learn some valuable points from a criticism of the experiences of an older physician, he began his address by discussing, what he termed the "etiology" of the relation between the two parties. It is of course the sick person who sends for the doctor, but the reasons for the selection made by the patient are various. If the physician is chosen because he is known to be competent and lives reasonably near, well and good; but if he is chosen because the patient's dinner or dancing partner assured her that he was absolutely the only man for nerves, beware. It was a positive danger to have emotional persons going about saying, "Dr. So-and-so is wonderful." Dr. de la Fouchardiere, in an amusing cynical book entitled "Les medecins malgré nous," points out that once the relation is made, the patient wants the doctor to find something, even if there is nothing the matter; or if something is the matter he wants him to find nothing. Ordinarily, the physician will find his patients anxious minded, seeking relief, and ready to give all possible help in that work, bearing illness bravely, and deserving his admiration and regard. Occasionally, he will find patients who are less anxious to keep to the truth than to produce a certain impression. He may also become familiar with the sublime unconscious selfishness of the neurotic, and with the imaginary great, who show their importance by giving trouble. Not infrequently, he may meet with patients who expect a sound opinion without adequate examination, information and reflection, and those who desire to be treated without any interference with harmful habits. The prevalence of new methods in medicine has led some patients and some doctors to a new error, namely, that of undervaluing the careful clinical method upon which all our work must be founded, and of thinking that some test will of itself make the diagnosis. The physician will early recognize that in illness there are two elements, namely the disease, and the patient's natural anxiety about it. The second element can often be put aside by a quiet assured manner on the physician's part. On the part of the patient the most unfortunate complication is lack of confidence. By the time the physician has done all in his power to help the patient, it will generally have vanished. If it has not the physician is justified in suggesting to the patient that what he really wants is a doctor he can believe in. Faith is a great help.

The "prognosis" of the relations between doctor and patient according to Dr. Spriggs is almost uniformly good, but not infrequently there will be some disappointment. Dr. Spriggs remembered one patient in his sanitarium in the north, in whose case he had been doubly fortunate in that a serious disease was discovered and means of complete relief applied successfully. In bidding farewell the patient said "Doctor I can never thank you enough; when I came here I was done and I knew it; now I am well again." His eyes filled with tears; he shook me by the hand, and then looking to the open windows added: "I believe it's the air." If you have learned to laugh, Dr. Spriggs said, at such circumstances you will have a good deal of quiet fun. However, in balancing the good and the bad, the physician will generally find that his rewards prove greater than his deserts.

It is on paper hard to define, the speaker continued, how much a sufferer should know about his illness. It is generally better to tell an intelligent person the truth in as simple language as possible, avoiding technical terms and any details which may afterwards be misinterpreted. If possible place the facts before him so that they are not too alarming. If the man is the subject of a serious chronic disease, he generally knows that he cannot be the same again, and he will be satisfied if you dwell upon how he can best be relieved, rather than upon the unlikelihood of cure. Above all in your desire to answer questions frankly, never go beyond what is certain. To destroy hope in the mind of any patient is inexcusable, and also unwise because you do not always know. Remember the motto *Guerir quelquefois, soulager souvent, consoler toujours*. "Finally," Dr. Spriggs said, "in looking back to the devoted clinical teachers of my youth, I sometimes wish that in their desire to pass on to us what was known, they had left less of an impress of finality and had opened our eyes to the great fields of the unknown that lay before us. I had the idea as a student that all the main discoveries in medicine had been made, and that new ones would come only from the exceptionally able, after laborious and abstruse research. It was not so, and it is not so now. I have only to look back upon the changes and the simplifications that have come over medicine in my short span to feel sure that there are those listening to my words to-day who will add to our knowledge, and to the means by which we may modify and arrest disease."

The substitution of brown bread for white in a diet made up to approximate to that of the Essex agricultural labourer, when fed, in carefully controlled experiments, to the laboratory rat, resulted in but small increase in growth and was accompanied by physical and nervous symptoms and by habits point-

ing towards a lack of, or imbalance between, food factors in the brown bread diet. The experiments give but little support to the propaganda for brown bread in the diet of the working classes.—G. H. Hartwell and V. H. Mottram in *The Lancet* 2: 892, Oct. 26, 1929.

Men and Books

ON THE BOOK OF ECCLESIASTES

By H. E. MACDERMOT, M.D.,

Montreal

There is in the Osler Library a group of books dealing with the Book of Ecclesiastes. Chosen with the discrimination which is so evident throughout the whole collection they are selected mainly for their reference to the well-known allegorical picture of senile decay contained in the exquisitely beautiful language of Chapter 12.

The first book on the list is entitled "The Book of Ecclesiastes," a metrical translation by Paul Haupt.¹ Then comes another translation by Morris Jastrow, Jr., which is given the title of "The Gentle Cynic, Being a Translation of the Book of Koheleth."² Jastrow prefers to call it "The Book of Koheleth," since Koheleth has been assumed by some to be the name of the author, a point however which has not yet been settled. Haupt believes that "he was not a theologian, but a man of the world, probably a physician, with keen observation, penetrating insight, and vast experience." Lastly, there is "The Pourtract of Old Age," by John Smith, M.D.³ This was written in the middle of the 17th century. Dr. Smith arrives at the same conclusion as to the meaning of the allegory as did the two later writers. But he has added something else, for, as Sir William notes in his Catalogue (p. 430), "An attempt is made to prove that Solomon knew of the circulation." Here is the passage referred to:

"It cannot but by this time be acknowledged by all those that have gone along with us, and taken notice of the aptness of these two expressions, viz., the Pitcher at the Fountain and the Wheel at the Cistern, to symbolize unto us the circulation of the blood,

1. The Book of Ecclesiastes. A new metrical Translation with an Introduction and Explanatory Notes by Paul Haupt. 1a. 8. Baltimore, 1905.

2. A Gentle Cynic, being a Translation of the Book of Koheleth, commonly known as Ecclesiastes, stripped of later additions. Also its Origin, Growth and Interpretation. By Morris Jastrow, Jr. . . 8. Phila., 1919.

3. "The Pourtract of Old Age. Wherein is contained a Sacred Anatomy both of Soul and Body. . . Being a paraphrase upon the Six former Verses of the 12. Ch. of Ecclesiastes. By John Smith, M.D. The 2nd ed. corrected." Lond., 1676.

4. "Discours de la conservation de la veuë: des maladies melancholiques: des catarrhes: & de la vieillesse. Composé par M. André du Laurens, Médecin ordinaire du Roi, & Professeur de sa Majesté en l'Université de Médecine à Montpellier", 1598.

and the use and action of the heart, and the parts belonging thereunto; that the doctrine which is now justly called Harvacan, was at first Solomonian."

These are the three books of the group, but in Haupt's translation there is the following pencil note by Sir William:

"I have kept this, which Haupt gave me, for the famous allegory in Section VIII (Ch. xii in the Authorized Version) and its interpretation. Haupt was much surprised when I pointed out that old Laurentius has the interpretation (Discours de la conservation de la vue. . . . et de la vieillesse)."

But where was "old Laurentius," for apparently Sir William did not possess his book, but had consulted it elsewhere? Its absence has always made something of a gap, not of great importance, perhaps, but enough to cause that sense of incompleteness which librarians understand so well. Now, however, the gap has been filled, for recently, one of McGill University's benefactors, Dr. Casey Wood, has placed in the McGill Medical Library a copy of Du Laurens' work, containing the interpretation mentioned by Sir William.

The book is rare enough, and is probably not to be found in many libraries. But what gives this particular copy its peculiar value is that it should eventually find a place under the same roof as those others with which it helps to make up so choice a collection.

THE ART OF THE APOTHECARY

In "The Mystery and Art of the Apothecary"* Mr. C. J. S. Thompson, formerly in charge of the Wellcome Historical Museum and now Honorary Curator of the Historical Section of the Museum of the Royal College of Surgeons of England, adds another to the interesting books he has written on those by-paths of medical history about which he has such an extensive store of curious knowledge. The present well-illustrated volume is full of out-of-the-way information, and in a charmingly easy style traces the history of the dispensers of drugs from Babylonian and Assyrian times up to the end of the eighteenth century. Among the ancient Greeks there were two distinct classes, the rhizotomists who collected the roots and herbs and prepared the preparations, and the pharmacopolists who sold them in the public market places. The word apothecary, first employed by the Romans, was derived from apotheca, meaning a store-room. In a chapter on the oldest remedies in the world,

* John Lane, The Bodley Head Ltd., 1929, 12s. 6d.

the three ancient Greek preparations—holy bitter (*hiera piera*), sacred sealed earth from the island of Lemnos, and *theriaca* or treacle—are described at some length, and the variations in their formulæ set out; the name treacle, for example, was applied to any thick compound of which honey was the chief ingredient. Among the numerous antidotes employed in classical days, some were associated with the names of famous persons, such as the “antidote of Caesar,” or the “gold antidote,” which contained forty ingredients, including gold and silver, and took a year to make.

During the eighth to the twelfth century pharmacy advanced among the Arabians, and the practice of the apothecary and the physician were distinct; the Mohammedan invasion of Western Europe carried the study of drugs into Spain and founded universities before the twelfth century. The earliest record of the apothecary in England is in 1180, and the account of the relations, in the succeeding centuries, of the apothecaries with the City Guilds—the Pepperers, the Spicers, and the

Grocers—throws light on the slow progress of the healing art. The story of the pharmacopœias dates from the early days of printing, when in 1498 a small folio of 88 leaves appeared at Florence, where “the learned doctors of medicine of the College of Florence, in order to prevent errors and to preserve constancy in the preparations employed in their practice, sought to collect the most important formulæ from the works of Mesue, Nicholas, Avicenna, Galen, and other authors.”

The history of the Society of Apothecaries of London and of some famous drugs is attractively sketched, and the story of the long disputes between the physicians and apothecaries, satirized by Garth in his well-known poem, “The Dispensary,” published anonymously in 1699, carries the reader towards more modern days. Mr. Thompson is to be congratulated on the enormous amount of information which he has collected and presented in an eminently readable form.—*Brit. M. J.* 2: 148, July 27, 1929.

Hospital Service Department Notes

THE TECHNIQUE OF HANDLING INFECTIOUS CASES

Some points in technique which are frequently overlooked were reviewed in an excellent paper read by Miss E. M. Forrest, Supervisor of the Infectious Diseases Hospital (Vancouver General Hospital), at the recent convention of the British Columbia Hospital Association at Nanaimo.

The stress now laid upon “contact,” rather than upon air-dissemination, was emphasized by Miss Forrest, who referred to the days when roads passing diphtheria-infected homes were closed by barriers to prevent the spread of the disease. One of the greatest difficulties in keeping down cross-infection has been the difficulty of making everyone, “nurses, maids, orderlies, cleaners and, dare I whisper it—sometimes our doctors, bear in mind the danger of “Indirect Contact.” The use of gowns is most advisable, but when a gown is hung up, folded lengthwise, clean sides in and together, one contaminated side touches the wall, thus rendering it an indirect contact.

The following precautions have proved to be efficacious at the Infectious Diseases Hospital in Vancouver:

All communications intended for the Department of Hospital Service of the Canadian Medical Association should be addressed to Dr. Harvey Agnew, Secretary, 184 College Street, Toronto.

On admission, patients are completely draped in a large sheet, thus keeping the carriage “clean.”

As far as possible, all ordinary equipment is left in the rooms until discharge, when everything is sterilized. In the rooms not provided with toilets, bedpans and urinals are sterilized each time after use, covers being used once only.

Clothing is listed by two nurses—one remaining clean to handle the clothes book.

In taking throat cultures from children, one nurse remains clean to handle the culture tubes, etc.

Three gowns, changed daily at least, hang in each room—one each for the nurse, the doctor and the cleaner.

Food.—Kitchens are kept “clean.” Salt, pepper and sugar shakers remain in the patients’ rooms. Everything else on the tray goes to the sterilizing room where the dishes are scraped, then sterilized, and then taken to the clean kitchen to be washed.

Paper napkins are used as handkerchiefs by the patients. Cut to one-fourth of their size and used but once, they are far superior to linen or gauze, which contaminates gown and pillow.

Nurses on this service are not segregated from the other nurses. They wear gowns and shoes different from those worn by the nurses on general duty and hair nets must be used.

They can leave the building, but are required to scrub thoroughly before resuming clean uniforms and shoes.

A bathroom is reserved for the sole use of patients leaving the hospital. Shampoos on discharge are given here.

The greatest enemy to good technique is lack of time. "Whenever a necessity for 'speeding up' occurs, our technique is almost sure to suffer," for disease germs are no respectors of ward conditions. Eternal vigilance is the price of success."

THE NEW HOSPITAL DIRECTORY

A REVIEW OF CANADIAN HOSPITAL DEVELOPMENT

One of the difficulties encountered by our Department of Hospital Service at the time of organization was the lack of information respecting hospitals in Canada. This was due, partly to the rapid expansion of hospital facilities, rendering lists obsolete within a few months, partly to the fact that most available lists were prepared from returned questionnaires, and partly because several provinces have kept record only of those hospitals receiving the government grant. Also, it was found that hospitals long since discontinued were still retained on certain lists. Repeated requests for information addressed to a Pacific coast hospital finally elicited the information that the hospital had ceased to function thirty years ago, was then a dance hall for twenty-five years, had had its roof caved in by snow five years ago, and had been sold two years ago at a tax sale for forty dollars!

Using as a basis an excellent list prepared in 1925 by Dr. Helen MacMurchy for the study of maternal mortality, the present Directory has been compiled from information in our Hospital Reference Library. The Department of Pensions and National Health, kindly arranged for the printing of the booklet at Ottawa, and the excellent maps with their unique symbols were prepared by the Natural Resources Intelligence Service. For this hearty co-operation of the Federal Government, the Canadian Medical Association is deeply grateful.

A review of the summaries for the provinces and for Canada as a whole reveals most interesting information. There are (or were, at time of going to press) altogether 886 hospitals in Canada, with a total bed capacity of 74,882. Of these, 481, with a bed capacity of 32,218, are public general hospitals. There are 31 tuberculosis institutions, with a total accommodation for 5,655 patients, a capacity which is still far from sufficient. Fourteen paediatric hospitals have 909 beds. Two hundred and forty-six other hospitals provide 3,119 paediatric beds as well. The total maternity accommodation, considering all hospitals, is slightly more than 6,000 beds. There are 47 Red Cross hospitals, outposts and nursing stations, with a bed capacity of 401. The

Department of Pensions and National Health operates 16 hospitals in all, with provision for 3,614 patients. Of these hospitals, 8, with 3,225 beds, are under the Department of Pensions. This Department has, in addition, special contracts with 120 civilian hospitals throughout Canada for the treatment of military pensioners. There are 215 training schools for nurses in Canada.

Accommodation for incurables is not as conditions warrant, there being but 33 hospitals with a total capacity of 2,700. Convalescent hospitals number but 9 in all, with accommodation for 325 patients—a totally inadequate provision. There is but one public institution (Ponoka, Alberta) which is properly prepared to treat drug addicts; facilities are provided for addicted soldiers at St. Anne and Westminster hospitals, and several private institutions treat addicts.

The average maintenance cost per patient per day in general hospitals throughout Canada is \$3.45. It is estimated that the annual maintenance budget for all hospitals for 1929 is more than fifty-one millions of dollars, while the replacement valuation of hospital buildings now in use would amount to \$241,000,000.

Reviewing Canadian hospital development, the "Foreword" to the Directory states, in part: "To-day the tendency is not to duplicate hospitals where they already function, but rather to enlarge existing institutions when possible. There is a strong tendency to favour fire-proof construction, better food service, increased laboratory and x-ray facilities, and better housing for nurses. The noise problem is being scientifically studied. Greater accommodation is being set aside for maternity patients; case and labour rooms are being provided, and there is a laudable tendency to permit all maternity patients a private room for the first day following delivery. Increased initial cost is favoured if it will result in a decreased maintenance cost.

"There are still many gaps in our hospital system. Despite excellent public and private efforts, the accommodation is still far from adequate for the incurable, the convalescent, the tuberculous, and the juvenile mentally defective patient. Moreover, the alarming increase in drug addiction and the difficulty of effecting a cure under ordinary home or hospital conditions have focussed attention upon the need of special public facilities for the treatment of these unfortunates, either by the construction of special institutions, or by a revision of the legal authority and the physical equipment of existing neurological institutions."

Copies of this Directory are being sent to the various hospitals in Canada, and additional copies may be obtained by writing to the Secretary, Department of Hospital Service, Canadian Medical Association, at Toronto.

SHOULD THE HOSPITAL DELAY DISCHARGING A PATIENT WHO CANNOT OR WILL NOT PAY HIS BILL?

This is a question which has had to be answered by practically every hospital in Canada. While the hospital carrying this to an extreme degree might lose more through lost revenue than it would obtain by its insistence, and might not be legally justified in forcibly restraining a debtor, nevertheless a judicious delay in permitting discharge will very frequently produce funds that could not be obtained by any other means. In discussing this problem "Modern Hospital" says in part:

This is an age in which people are very much disposed to live far beyond their means. It is easier for a family to insist that a relative be placed in a private room at the time of his entrance into the hospital than it is for them to realize that they have assumed a definite moral as well as financial obligation to pay the hospital for this service.

It is not inhumane, when a patient understands the extent of the obligation he has incurred, to require that this debt be paid in full. It is a kindness to the patient so to do. Many a hospital superintendent has been confronted with similar situations. He is torn between two decisions—to rule that the patient cannot leave the hospital until his bill is paid, or to spend more of the institution's funds in trying to collect the debt.

The day of imprisonment for debt has passed. To refuse to discharge a patient for an unpaid board bill is virtually to deprive him of his liberty. Taking this step sometimes has a tendency to bring a recalcitrant family to its senses and to make it realize the seriousness of this type of dishonesty.

The hospital is too often imposed upon by conscienceless persons, and yet the executive of every institution expects that there will be some whose natural unmoral tendencies prompt them to defraud whenever possible. Such persons, if they own property, should be required to pay and it is not unethical to take steps to bring this about. It would be folly, on the other hand, to persist firmly in refusing to discharge a patient because his bill has not been paid.

Such a happening might be avoided by a more thorough investigation soon after admission and the refusal to sell private room hospital service to those whose credit is doubtful, when the superintendent is convinced that their means would indicate ability to pay only for public ward care.

Canadian hospitals have adopted various expedients, especially in the cities, where this problem is more serious than it is in rural communities. Enforcement of the rule that payment be weekly in advance is advisable. This ruling should be elastic and may be waived in the case of reliable citizens known to the management, but it does make easier the task

of collecting from unscrupulous or tardy patients. This notice should be posted in each room and should be coupled with the notice that non-payment of the room charge, will necessitate removal of the patient to the public ward. Some hospitals refuse to accept unmarked cheques from strangers for the final payment without verifying the validity of such cheques before the patient is discharged.

One large eastern hospital has a printed form which details the regulations governing public, semi-private, or private patients, as the case may be, and which includes the scale of charges from various services. This is given to the patient or to an accompanying relative. The friend or relative must then sign a *guarantee of payment*, promising to pay all hospital charges before the patient leaves the hospital. This regulation is enforced when the patient is unknown to the hospital officials.

These and other regulations are of considerable help in reducing to a minimum the annual loss from bad debts. However, in view of the fact that such a large percentage of the public delight in seizing any pretext by which to criticize a hospital, no pains should be spared to exercise the utmost tact and judgment in approaching an over-wrought patient or relative on this delicate but necessary consideration.

LITERATURE AVAILABLE

The Department of Hospital Service has prepared information on various hospital problems which is available for hospital trustees, superintendents, or medical staffs. These articles have been prepared to meet the needs of the *small hospital* in Canada. Copies may be obtained by writing to the Secretary of the Department of Hospital Service, at 184 College Street, Toronto.

Subjects:—

"Medical Staff Rules and Regulations for Small Hospitals."

"First Steps in Building a Small Hospital" (Articles I to III).

"Suggestions for Planning a Small Hospital" (Article IV).

"Equipment List for a Small Hospital" (Article V).

"Equipment List for a Nurses' Home" (Article VI).

"Equipment List for an Operating Room."

"Delivery Room Equipment."

SURGICAL CATGUT.—The manufacture and use of catgut dates from earliest times, though the first reference to its employment as a surgical ligature appears in the writings of Galen. Apparently it fell into disuse in surgery, and was not reintroduced until early in the

nineteenth century, the credit for this rediscovery being given to an American, P. S. Physick, who studied in this country, and incidentally was house-surgeon to John Hunter. Contrary to what the name would imply, catgut is made from the small intestine of the sheep.

Association Notes

BRITISH MEDICAL ASSOCIATION, WINNIPEG, 1930

In the November issue of the *Journal* (p. 597) we published a list of the officers of the local General Committee for the meeting of the British Medical Association at Winnipeg in 1930, and of the Sub-Committee and Sectional Chairmen and Secretaries.

The complete list of the officers of the sections has now come to hand and is as follows:—

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Special Correspondence

The London Letter

(From our own correspondent)

The academic year for the medical schools in London begins with a flourish about the beginning of October each year, and the occasion affords an opportunity for the publication of several discourses on certain aspects of the profession which might not otherwise see the light of day. For example, at Guy's Hospital, Sir Humphry Rolleston spoke on the "Origin and Value of Medical Societies," while, at St. George's, Dr. Edmund Spriggs gave a witty and very clever discourse on "The Relationship between Doctor and Patient," founded, so he said, on thirty-three years of mistakes. He discussed the etiology and pathology, the diagnosis, prognosis and treatment of this relationship and one of his striking phrases was that "to destroy hope in the mind of any patient is inexcusable." This paper should be taken as an antidote to another which secured much publicity in the lay press, when Sir E. Farquhar Buzzard, Regius Professor of Medicine at Oxford, but better known as one of the physicians who attended the King in his recent illness, delivered an address at Birmingham on "Arrogance and Ignorance in Medicine." He maintained that we knew shockingly little about diseases, that we could cure only a very small number, and that the sooner the public realized this the better. He also said some very useful things about the practice of medicine, but, unfortunately, it was naturally the words arrogance and ignorance which attracted attention, and such publicity as was afforded should go a long way towards destroying just that hope and that delicate relationship between doctor and patient which Dr. Spriggs was at so much pains to extol.

In the matter of insanity preventive medicine is slowly working back through border-line states to the earliest departures from mental health, and several interesting developments have taken place in London in the last few years. It is notorious that sufferers in the early stage of mental derangement will not go near the well-known mental clinics, partly out of prejudice but mostly out of fear of the diagnosis. Some years ago the Middlesex Hospital set aside two small wards for border-line psychological patients, under the charge of a visiting physician who had wide experience of this work, and patients attended a neurological outpatient department and were admitted as required. Thus, mental derangement in its very early stages was regarded as perfectly analog-

ous to disorder of any other system. The most recent development is on slightly different lines. Most of the preliminary treatment of mental cases in London is carried on through the machinery of the Poor Law by medical officers and nurses of the observation wards of the workhouse. The scheme which Dr. Alan Randle has put into action in the last few years has been considered promising enough for adoption by the London County Council when they take over the Poor Law services in April 1930, and, indeed, it may well serve as a model for future developments in other quarters. Briefly, what he has done is to set up a psychiatric unit to deal with any type of organic nervous disorder, any type of functional nervous disorder, disorder of conduct in children, incipient mental disorder in adults, who attend voluntarily, and cases under statutory orders for detention and examination. One of the resident medical officers (out of six) of the institution deals with these special cases, advised by a visiting specialist. Nurses are in charge who have had medico-psychological training, and the ordinary general services of a hospital, x-ray, dental, etc., are at the disposal of the special clinic. An outpatient clinic is open once a week, and an important part of the work is on the social side whereby the friends and relations of patients can be seen and advised. The new policy set out in this brief summary has already resulted in a drop in the annual figure of cases having to be certified as insane and a 10 per cent saving on approximately 500 cases is a satisfactory gain for one year's work at one institution.

After eighty-two years in its home at the corner of Bedford Street and the Strand the "Lancet Office" has moved to a fine new home, not far away, in Adam St. Adelphi. An informal "At Home" was held last month, when the editor, Sir Squire Sprigge, entertained a large collection of guests on the new premises which were open for inspection. The new home is a beautiful building designed and executed by the four celebrated Adam brothers in a famous quadrangle of symmetrical streets originally erected on arches. For some years the home of a strong religious organization, and more recently occupied by a firm of architects, the house now gives haven to a journal about its own age and very much of its own style in elegant architecture.

ALAN MONCRIEFF.

London, November, 1929.

The Edinburgh Letter

(From our own correspondent)

In the beginning of October, Edinburgh celebrated the end of an "auld sang," when the ministers of the "Auld Kirk" met those of the United Free Church in the High Street and the joint procession passed into St. Giles' Cathedral to give thanks that the controversies and strife of the last eighty-four years are now settled. The Assembly of the reunited Church of Scotland was presided over by the Duke of York, the Lord High Commissioner, and various public bodies took the opportunity of her being in Edinburgh to invite the Duchess of York to perform the opening ceremonies at various national and charitable institutions.

On the 30th of September the Duchess laid the foundation stone of the Hospital for Cripple Children (for the south-east of Scotland), which is to be erected at Fairmilehead, on the southern outskirts of Edinburgh. The institution when completed will stand on 14 acres, facing the Pentland Hills in healthy, breezy surroundings. It will form the central point of a scheme embracing the whole of the south-east of Scotland, functioning in co-operation with cottage hospitals in outlying districts, and so linking up the whole orthopaedic treatment for this section of the country. Of the £75,000 required for the institution, more than £50,000 have already been collected.

On October 5th the Duchess opened the Training Centre for women household workers for the Overseas Dominions at Millersneuk, Lenzie. The trainees come from various parts of Scotland, and although the hostel is a comparatively recent creation, thirty-three girls have actually been trained in the domestic arts and have departed to Canada. Every effort is made to equip them for the conditions they are likely to find when they proceed overseas, where proper provision is made for their reception and work is found for them. Later in the day the Duchess visited the old manufacturing town of Blantyre on the Clyde, and opened the National Memorial to Dr. David Livingstone, the great missionary and explorer. Immense public interest was taken in this visit. The restoration of the birth place of this great Scotsman and medical man has been largely carried out by subscriptions raised by the school children of Scotland. Here Livingstone was born in 1813. In 1840 he was admitted a Licentiate of the Faculty of Physicians and Surgeons of Glasgow.

The first public act of the Right Rev. Dr. John White, Moderator of the reunited Church of Scotland, was to dedicate the new chapel erected at Glasgow University to the memory of the lecturers and students who fought and died in the Great War. Some 3,400 alumni of

the University saw service, and 750 made the supreme sacrifice. This memorial is situated in the western quadrangle of the University and is an imposing addition to the stately historic pile of buildings at Gilmorehill.

The Annual Report of the Curator of the Laboratory of the Royal College of Physicians, Sir Robert Philip, M.D., LL.D., is now available. The report is divided under two heads into "Reporting" and "Research." In the Reporting Department there has been a greater demand on the resources of the laboratory than ever before. As showing how this work has increased, it is of interest to note that in 1890, the year after the laboratory was first opened, 50 reports on specimens were sent out. Last year the number issued was 14,316. The investigations of some of the research workers has received formal recognition. Dr. W. C. Kermack has received the Macdougall-Brisbane Prize for the period 1926-28, from the Royal Society of Edinburgh for his contributions to Chemistry. Dr. C. G. Lambie has received from the Royal College of Physicians the Lister Fellowship for his work on carbohydrate metabolism. During the year 1928 twenty-three workers have been engaged in research. Their researches relate to pathological, bacteriological, chemical, physiological and statistical problems.

The series of experimental investigations with a view to the standardization of tuberculin, initiated by the Curator in concert with Professor T. J. Mackie, has now been completed. Parallel observations were carried out by Dr. Donald Stewart on human beings and by Dr. R. S. Begbie on guinea-pigs. The resulting figures have been examined statistically by Lt.-Col. A. G. McKendrick (the Superintendent) and Dr. W. O. Kermack, in order to obtain from the observed data the figure most likely to represent the true strength of an unknown tuberculin in terms of the standard. This problem has attracted attention generally, and a Committee of the League of Nations is investigating the matter.

The research on pneumonia in childhood by Dr. Charles McNeil, Agnes R. Macgregor, W. A. Alexander and Lt.-Col. W. Glen Liston is approaching completion. The results are now appearing in a series of papers published in the Archives of Diseases in Childhood. These deal mainly with the morbid anatomy and histology of the various types of conditions which have been encountered. By the aid of large paraffin sections of entire lungs, prepared by Mr. T. D. Hamilton, it has been possible to obtain an extensive view of the pathological changes which occur.

During the recent epidemic of influenza in Edinburgh an attempt was made to estimate

the prophylactic value of vaccination. In all, 700 persons were inoculated. The vaccine consisted of mixed strains of Pfeiffer's bacillus, streptococci, and pneumococci, and two doses were administered. The epidemic had already obtained a firm foothold before treatment was commenced, and it was seldom possible to contrast similarly constituted sections of the community which had been inoculated, and which had not been inoculated. It is not feasible from the figures obtained to demonstrate the existence of a material degree of protection against the disease, but it appears that the inoculated suffered much less severely than the uninoculated. The results obtained are better than those obtained by McCoy and Meyer, but not so good as those of Duval and Harris, who used a vaccine sterilized by chloroform, and not, as is the ordinary custom, by heat.

In last year's Report it was stated that, in co-operation with the Chemotherapy Committee of the Medical Research Council, work was being carried out on the synthesis of compounds which might possibly possess anti-malarial action. In accordance with their scheme, Mr. T. F. Smith has been given a grant by the Department of Scientific and Industrial Research to enable him to assist Dr. W. O. Kermack in this work. Dr. R. H. Slater, who holds a Carnegie Fellowship, has also attempted to synthesize another series of compounds which might exhibit anti-malarial action, and in spite of certain technical difficulties considerable progress has been made.

Various experiments have been carried out by Dr. Kermack and Dr. W. Leeper with a view to elaborating a simple method for the approximate determination of pepsin in stomach contents or other body fluids.

The work of Dr. Kermack and Mr. Spragg on the physical properties of Wassermann antigens described in last year's Report has been continued and considerably extended. In

particular, their protective properties on colloidal solutions of gold and other substances have been investigated.

During the last eight years a group of workers has been engaged in the collection and examination of information regarding asthma in the Edinburgh area. The work has been carried out under the direction of a committee consisting of Drs. J. S. Fraser, Cranston Low, D. Murray Lyon, J. C. Meakins, Lorrain Smith, Lt.-Col. Harvey and the Superintendent Lt.-Col. A. G. McKendrick. A preliminary analysis of the results emerging from the examination of 404 patients has already been published.

R. W. Johnstone, the Professor of Midwifery in Edinburgh University, was the guest of the American Association of Obstetricians, Gynaecologists and Abdominal Surgeons at their annual congress, which was held at Memphis, Tennessee, on September 16th to 18th. Professor Johnstone delivered the second Joseph Price Foundation Lecture, taking as his subject the new views on the physiology of menstruation and their possible bearings on practical problems in obstetrics and gynaecology. In particular, he gave an account of the first seven months' experience of the "Pregnancy Diagnosis Station" established in Edinburgh University Animal Breeding Research Department under Prof. Crewe, for carrying out the Zondek-Aschheim test for early pregnancy. In a series of 150 cases, in which sufficient time had elapsed to control the results by clinical means, the factor of error was found to be between 2 and 3 per cent. In view of the building of a new maternity hospital in Edinburgh in the near future, Prof. Johnstone took the opportunity to visit several of the leading and latest maternity hospitals in New York, Brooklyn, Cleveland, Chicago, Baltimore, Philadelphia, Boston, and last, but far from least, Montreal.

GEORGE GIBSON.

23 Cluny Terrace, Edinburgh.

Letters to the Editor

Medical Men and Postage Stamps

To the Editor:

A small item headed "Postage Stamps," on page 484 of the October, 1929, number of the *Journal* is of special interest to medical philatelists. I trust therefore you will pardon a correction.

In the 1906 issue of the Philippine Islands the two-cent postage stamp bears the portrait of José Rizal.

José Rizal, M.D., Ph.D., was a native of the Islands, born in 1851. He took his M.D. at Madrid, and later his Ph.D. at a German University. Returning to his native country he brought to bear upon the social problems of his compatriots modern thought and scientific methods, which soon identified him with a

young party of revolutionists. He published one novel of a social philosophical character. He was frequently arrested and finally being, at least nominally, convicted of treason against the Spanish government of the Islands, was executed.

His portrait, therefore, appeared on a stamp issued under the American rule of the Islands in 1906, over twenty years before the portrait of the Polish surgeon-general appeared. I am unable to state positively that Rizal was the first medical man whose portrait appeared on a postage stamp, but believe it is probable.

Years truly,

D. E. H. CLEVELAND

Vancouver, B.C., Oct. 21, 1929.

Topics of Current Interest

POSSIBLE DANGERS OF COD-LIVER OIL

The fact that the administration of cod-liver oil is by no means an invariably safe proceeding is becoming increasingly clear, and a recent number of *Acta Pædiatrica** is almost entirely devoted to a study of the problem from several points of view. P. Henriksen, after an extensive survey of the results on the body cells of vitamin A given either in excess or in deficient quantity, comes to the conclusion that general cell degeneration throughout the body may be produced by large doses. In his experiments on young rats doses of over 1.4 grams of cod-liver oil per kilogram of body weight caused such degeneration. He strongly criticizes certain previous workers, however, and especially Agduhr, for suggesting that cod-liver oil may be dangerously poisonous to the heart, and may even lay the foundation of future heart disease. Agduhr replies to these criticisms in the same number of the periodical, pointing out that he was himself considerably puzzled by the lesions found in the hearts of certain experimental animals which were given toxic doses of cod-liver oil; in order to take the matter a step further he has studied, in conjunction with Dr. N. Stenström, the appearance of the electrocardiogram in heart lesions produced by cod-liver oil treatment. From the outset of these experiments it was necessary to determine the appearance of the normal electrocardiograph of white mice and also what variations in the rhythm of the heart might occur quite apart from cod-liver oil intoxication. It was ascertained that after the animal has passed the first period of growth, lasting for about the first month of life, the electrocardiogram remains practically constant during the period of life covered by the experiments. At first, as a result of studying some seventy mice, it was proved that even highly pronounced morphological heart injuries could be present without the electrocardiogram showing any obvious changes from what at this time could be regarded as the normal. When animals were followed more exactly over a longer period of time certain definite changes were observed, especially in the ventricular part of the electrocardiogram, which altered its features so consistently that the experimenters were able to recognize it as "a typical cod-liver oil electrocardiogram." In addition, the auriculo-ventricular conduction time was prolonged in animals treated with cod-liver oil, in many instances to a pathological degree. The exact mechanism of these disturbances of the

cardiac contraction appears to be uncertain, but there is a definite correlation with the morphological changes observed in the cardiac muscle. In less than one year mice showed alterations in the electrocardiogram with doses of even such small amounts as 1/7 c.cm. of cod-liver oil per kilogram of body weight daily. This would correspond bulk for bulk with approximately 25 minims of cod-liver oil daily for a 12-months-old infant, but the whole question of differences of susceptibility has to be taken into account. C. W. Herlitz, I. Jundell, and F. Wahlgren contribute yet another paper on this subject, with reference to the harm done—more especially to the heart—by the antirachitic substance. They conducted a series of extensive and elaborate experiments on animals, and showed that doses of this substance, quite comparable with those employed in clinical medicine for children, could produce considerable degenerative changes in the cardiac muscle. They feel very strongly that the public should be warned about the danger attending the indiscriminate use of cod-liver oil and also of various forms of irradiated milk. Taking the three papers here considered as a whole there still seems to be some difference of opinion as to the effects of cod-liver oil in ordinary therapeutic doses, but the subject is of sufficient importance, and the present evidence is suggestive enough, to warrant a more intensive study, so that a definite answer may be given to the question—can cod-liver oil do harm?—*Brit. M. J.* 2: 354, Aug. 24, 1929.

SCARLET FEVER CARRIERS

Several outbreaks of scarlet fever ascribed to carriers have recently been described by Dr. Ruth Tunnicliff and Dr. T. T. Crooks.* In the first epidemic the infection was introduced into the ward of a children's hospital by a boy who was admitted apparently during the incubation stage of the disease, for he developed scarlet fever three days afterwards. Another case was noted on the same day, and still another nine days later. The usual measures were enforced with regard to quarantine, but further cases nevertheless appeared in the same ward on the twelfth and thirteenth days after the last case. Throat cultures were now taken from everyone in the ward, including doctors, nurses, and wardmaids, and hæmolytic streptococci, said to be specific for scarlet fever, were isolated in almost pure culture from a doctor and a nurse who had had a sore throat about a fortnight before. Further examination showed

* *Acta Pædiatrica* 8: June 12, 1929.

* *J. Am. M. Ass.* 93: 1498, May 4, 1929.

that at the end of five days the streptococci had disappeared from the throat of the doctor, but the subsequent history of the nurse is noteworthy. She was allowed to remain on duty in the same ward and about a month later three new cases developed among the patients, although face masks were now being worn by the nursing staff. On the occurrence of these cases she was still found to be harbouring a hæmolytic streptococcus and was taken off duty from the ward and given work which only permitted contact with other nurses. At the end of about another month a colleague who had been in the habit of visiting her room developed scarlet fever, and at this stage her throat was examined by an ear and throat specialist. Chronic tonsillitis was found and the specific streptococci were isolated from the tonsils when they were removed. After operation, throat cultures failed to reveal the presence of hæmolytic streptococci and no more cases of scarlet fever appeared in the ward. Tunnicliff and Crooks's paper also gives details of two family outbreaks of scarlet fever in which the only possible contact of the children with the outside world was by means of the father, who was in each case found to be harbouring a hæmolytic streptococcus of the type specific for scarlet fever. Epidemiological evidence is overwhelmingly in favour of carriers, both healthy and convalescent, being responsible for the spread of scarlet fever, and since the streptococcal etiology of scarlet fever was established the epidemiological indications have fitted in very accurately with what we know of the distribution and habitat of the hæmolytic streptococcus. Absolute proof awaits better classification of the streptococci, but in this connection it may be noted that Miss Tunnicliff has previously described a method using the opsonic technique for differentiating the scarlatinal streptococcus. It does not seem difficult to carry out and she says that it is as quick and accurate as the cultural diagnosis of diphtheria. If this work can be confirmed it will go far to simplify the diagnosis of the disease and the determination of carriers, and will thus give good ground for administrative action which is at present based largely on strong suspicion. — *The Lancet* 1: 1314, June 22, 1929.

ARSENICAL POISONING IN THE INDUSTRIES

The diagnosis depends upon a very thorough understanding of the pharmacological action of arsenic in the body; familiarity with the symptoms; a history of exposure to arsenic; and upon laboratory evidences of arsenic absorption to confirm the clinical diagnosis.

It has been pointed out that while it may be relatively easy to make a diagnosis of acute arsenic poisoning for a physician thoroughly conversant with the symptom complex—especially in cases where a history of exposure is available—it may be extremely difficult to make a diagnosis in the so-called chronic or subacute cases, even for an expert. The symptoms are those which may occur in a number of other conditions. There are no pathognomonic symptoms or signs. It must be borne in mind, further, that arsenic workers may be subject to appendicitis, cholera or other disturbances referable to the gastro-intestinal tract, just as any one else. They may also be afflicted with peripheral neuritis of alcoholic, luetic or other origin, and paralysis may have no relation to arsenic absorption in any given case. The great differences in individual susceptibility to this poison must also be remembered.

The difficulties which are constantly arising in the compensation courts with reference to arsenic, just as with reference to lead, are due not so much to the difficulty in making the diagnosis of this disease *per se*. They arise, rather, from the difficulty of proving, in a particular case, and beyond the possibility of a reasonable doubt, that the person in question is suffering from this disease, rather than another which might manifest itself clinically in a similar way. It is for this reason that the careful physician finds it indispensable in preparing his case, to make all possible laboratory analyses to confirm his clinical conclusions. In the case of arsenic, the laboratory can be of the greatest assistance, since arsenic is excreted in the urine and the fæces; and for a long time after it has disappeared from there, it may be found in the hair, the scales of the skin, and in the fluid of vesicles—where there is a skin eruption. Since the skin eruptions in cases of arsenic poisoning may greatly resemble any of the other skin eruptions, the finding of arsenic in the blebs, or in the excreta would be of invaluable assistance in clinching the diagnosis. While paralysis may outlast any laboratory evidences of arsenic absorption by many months and even years, all other signs and symptoms are of relatively short duration by comparison, and will usually be found associated with laboratory evidences of arsenic absorption. It behooves the examining physician to make all necessary laboratory tests immediately, or as soon as possible, in order that his patient be properly protected. By the time the case comes up for compensation, invaluable laboratory evidence may no longer be available, since by that time all of the poison may have been entirely excreted from the body. Workers have failed to receive compensation due to negligence of this sort on the part of

their physicians.—May R. Mayers, M.D., in the *Industrial Hygiene Bulletin*, New York, Aug. 1929).

WOMEN AND THE STUDY OF MEDICINE

There are many proofs that from the beginning of time women were quietly and efficiently tending the sick and binding up wounds. Many women doctors were in practice in ancient Greece and Rome. Ceneone, the wife of Paris, had the gift of healing, and the Cornish Princess Isolde was a doctor. It has always seemed to me that there is a good deal of evidence for the book of Ecclesiastics having been written by a woman doctor. The authorship is attributed to Kohelith, a feminine word in Hebrew for a teacher. It certainly shows signs of having been written by a somewhat disillusioned person—a state of affairs not altogether inconsistent with the experience of a practitioner of the healing art of some years' standing.

In the Middle Ages learning was not widely diffused, and was not regarded as a gentleman's accomplishment, and was therefore in a certain degree left to women. Ladies of the mediæval households were both nurses and doctors. Miss Kemp Welch in "Six Mediæval Women" gives a most graphic account of the day of one of them. Many heads of nunneries studied medicine, notably St. Hildegarde, who wrote the most famous book on medicine of her time. Then there was the famous school of Salerno, where in the tenth and eleventh centuries was a fine medical school, in which women as well as men taught, wrote, and practised medicine and surgery. In the twelfth century romance, "Le Lai Des Deux Amants," there is mentioned a woman who had studied for 30 years at Salerno, and in that celebrated school had completely acquired the art of medicine. In the romance of Gwaine and Gawin, when he is wounded in his fight with a giant, he is "healed at a fair castle by two maidens who were learned in leechcraft, and they also restored to health his lion." In the *Via Sacra* round Athens we constantly see Greek inscriptions, such as "To Basile, the Woman Doctor," "Thecle, the Woman Doctor, lies here." In Ostia, the Rhone Valley, in Spain and Africa, many a marble slab has been found erected to women doctors by some grateful patient. Galen mentions Aspasia, from whom he copied many prescriptions, and Cleopatra, a famous gynaecologist, another of his colleagues. There must have been women doctors in Egypt for thousands of years.

There is a story told by a Latin author of the time of the Emperor Augustus, that at one time it was forbidden in Athens for a woman or a slave to study medicine. Whereupon a certain woman cut her hair short and dressed

as a man, studied and practised medicine with such success that the women pleaded for her. Whereupon the law was repealed, and women were free to study and practice medicine. Bologna had in the eighteenth century at least seven women professors—one, the professor of mathematics, was appointed by the Pope, and, another, Anna Maria delle Donne, was appointed professor of obstetrics by Napoleon Bonaparte. There were many medical women in Italy, Germany, France, England, Spain, and Poland, who practised or wrote medical works before the revival of the nineteenth century, but after the fifteenth century the number of women practising medicine became fewer, and finally almost disappeared. In Elizabeth's time, Anne Cooke, who became Lady Bacon, and her sister Mildred, Lord Burghley's second wife, were both described as skilful in surgery and distillation of waters.

In the seventeenth century Margaret, the celebrated Duchess of Newcastle, was taught physic and chemistry. During the Stuart period the sense of public duty, so noticeable in the learned ladies of Tudor times, found its chief expression in the study of medicine.

There is scarcely a description of the upbringing of girls at this time which omits all reference to the study of physic. At home the mother instructed the daughter, but this was not the only means of obtaining information. Women doctors took apprentices. We read in Mrs. Elizabeth Walker's biography that she was very competent both in "physic and chyrurgery." Her medicine store contained at her death a good store of vomits, purges, sudorifics, cordials, pectorals, almost all kinds of syrups, and strong and simple distilled waters. Some women doctors had a fashionable reputation. John Evelyn supped in the City with a gentlewoman called Everard that was a very great Chymist, and obscure country villages had their female practitioners.

When medicine became more of a science, and less of a mystic empirical art, the men of science declared that women were incapable of learning it, and gave them no chance of proving whether they were capable or not. At the same time the old prejudice as to the mental inferiority of women was helped by the new prejudice that every woman possessed of unusual skill was a witch, and deserved to be cruelly done to death. Naturally, they ceased to practise medicine. In France it took 300 years of struggle to exclude women from the profession. In Henry VIII's reign a law was passed which prevented women from practising medicine unless they were approved by a bishop, who should call unto him four physicians and four surgeons. Apparently no women were examined and approved, but still some of them continued to heal people without payment. The

passing of the Medical Act of 1858, though a great advance in many ways, made it impossible for women to practise medicine unless and until a university or corporate body with power to examine them would do so and grant them degrees.

In our own times the onslaught on the closed and barred gates of the citadel of medicine began with a thirst for knowledge, when women demanded higher education for themselves.

Among the pioneers in the women's medical profession Dr. Elizabeth Blackwell, Dr. Elizabeth Garrett Anderson, and Dr. Sophia Jex-Blake are outstanding. Elizabeth Blackwell's name was entered on the British Registrar in 1859. The other two first met at a lecture given by Dr. Blackwell in London, and from this meeting was born in them the determination not only to study and practice medicine, but to make this career available to others. After many difficulties they achieved their own medical education and then, with the help of Mrs. Thorne, managed to infuse others with their spirit and to secure the foundation of the London School of Medicine for Women. Some men were sufficiently enlightened and in advance of their times to see the justice of allowing women to carry on whatever work they felt they could do. In the very early days nearly 200 men doctors had signed a petition in favour of women in medicine. Sir James Paget was one of them, although he did not quite approve of women entering the medical profession.—Dr. Jane Walker, *The Lancet* 217: 736, Oct. 5, 1929.

THE "SINGLE STREAM" IN MEDICINE

The annual general meeting of the British Medical Association occurs this year at a moment when the future of the medical profession in Britain is in some doubt. Is the profession to pass, little by little, under the controlling influence of the State? Or is a policy of whole-hearted co-operation between the official and the unofficial sections of the profession to be adopted? At the present moment the stream of professional life flows through the Universities and teaching schools, and the great voluntary hospitals exist and work in close association with the Universities and schools. An urgent need of the day is to bring the public medical services more fully into the stream of professional life. If this is not done the hospitals, soon to be conducted by local authorities in all parts of the country, will fail to give the best service to their patients. There will be two streams of professional life instead of one, and the new stream will flow in channels remote from those of the existing stream. The British Medical Association has to-day a great

opportunity as a body, which includes among its members men and women engaged in every branch of the profession. By the weight of its influence it can help immeasurably to promote that policy of co-operation which will enable medicine to present a united front to disease. If, on the other hand, its influence is not exerted, co-operation will be delayed or defeated. The Association in the past has proved itself a strong advocate of the "single stream" of professional life, and a formidable opponent of attempts to divide the stream. It has urged that members of a learned profession have everything to gain and nothing to lose by thinking together and working together. If the discussions at Manchester, private as well as public, tend to awaken new enthusiasm for this ideal, they will have an undeniable public service to their credit.—Editorial: *Manchester Guardian*, June 19, 1929.

[We, in Canada, would do well to ponder on this subject, for the same problem that is engaging their attention in England is commencing to loom up here.—Ed.]

GROUP OR STATE MEDICINE?

If the public and the medical profession are no longer satisfied with one another, it may be, as Dr. F. G. Crookshank suggests in a recent issue of the *Forum*, because they never were. In any case he thinks that a little honest discussion can do no harm, and, like Sir Farquhar Buzzard, has made an interesting attempt to weigh the grievances of the public impartially, and to discover their cause. The poor have little to complain of, for on the whole they get the best doctoring there is. They have the opportunity when really ill of submitting themselves to the best medical opinion and treatment available, under doctors whose anxiety is not to please but to do their best. The rich come off next best because, although they can pay for the best medical advice and treatment in the land, they are able to choose for themselves, and in this choice they may be led astray in their choice of a specialist unless they act under the direction of a good medical adviser. This adviser should be their family doctor, who can tell them when to consult a specialist and what specialist to go to. But in many cases they have thrown him aside and sought specialists on their own account, guided then only by knowledge picked up from the papers, the best of which cannot be trusted to discuss a medical subject without eccentricity of opinion or material error, or by the idea that what costs most must be the best. The middle-class man's grievances are due first to the fact that he has aped the rich in throwing over his best friend, the family doctor, and putting himself in the hands of specialists who may not

know enough of general medicine to have a proper grasp of their own specialties. The second and most pressing grievance of the middle class man is that, although he is not poor enough to receive hospital treatment, he cannot afford the fees of pay wards or nursing homes, with what seems to him their unnecessary and useless luxury. Dr. Crookshank's solution of the problem lies in a great extension of hospitalization. Hospitals will have to be formed by communities or social groups, organized to deal with the different medical, surgical, and social needs of these groups. Doctors will have to abandon their prejudice against receiving public money for work done in hospitals and admit the need for a measure of public control over such medical service other than by purely medical boards or committees. Any system of payment by fee according to work done is, in his view, foredoomed to disaster. With such a scheme there would be: first, the present hospitals and infirmaries for the indigent sick; second, a chain of hospitals on the German model for the insured population; third, municipal hospitals for all citizens who might care to use them, the wards of which would be free, with cubicles or private rooms available on payment of a small additional contribution; fourth, co-operative hospitals organized by group enterprise, with or without municipal state subsidy, or by insurance corporations; and, fifth, privately run hospitals or nursing homes with accredited medical or surgical staff for those who desire a luxury service. These hospitals would be partly staffed as at present by paid resident medical officers, but would also have a visiting staff of physicians and surgeons who would be paid for their services while retaining the right to private practice. The general practitioner in the neighbourhood of such hospitals would keep in close touch with them and share the sessional work at the clinics. This is the solution of "Group medicine," as distinct from that of "State medicine," which was advocated by

Mr. T. Swann Harding in the previous number of the *Forum*.—*The Lancet* 2: 885, Oct. 26, 1929.

CHILDREN AND CINEMA PERFORMANCES

More and more it is becoming evident that the cinema has an evil influence on the education of children, and Dr. Rouvroy, the medical superintendent of an institution for abnormal children, who has been able to investigate the effects of cinematograph performances on three types of children—namely, the abnormal, the subnormal, and the highly strung—has called attention in the *Revue Internationale de l'Enfance* to the danger in this connection. The results are said to be worse than those brought about by harmful books or pictures, and no real value can, he thinks, be attached to the operation of a censorship or the imposition of an age limit. Even the best films for adults contain scenes of violence and crime; they may be of a highly suggestive type, and they have an intense effect on the sensitive mind of the child. In particular, films of the propaganda kind tend to advertise the vice they are supposed to condemn. Moreover, the intensity with which the child's attention is gripped by the film story is a cause of fatigue. Thus, a performance lasting two hours, including ten two-minute intervals, involves an expenditure of 20 per cent of the physical energy—twice that involved in the ordinary school day; the effect is still greater in the case of less healthy or nervous children. The stereotyped gestures of the actors make a remarkably deep impression on the subconsciousness of the spectator; a whole category of physically and mentally subnormal children (often considerably under the age specified in the regulations) are affected by such gestures, and reproduce them automatically in moments of strain. Moreover, Dr. Rouvroy remarks, subnormal children are more numerous than is generally thought.—*Brit. M. J.* 2: 513, Sept. 14, 1929.

NICKEL-PLATERS' RASH.—Gron states that Blaschko in 1889, when speaking of "galvanizers' eczema," was the first to draw attention to the injurious effects of the nickel bath on the workman. The form in which the eruption usually appears does not differ to any great extent from the other occupational dermatoses due to local irritation by salts of heavy metals. After an initial stage of itching a dermatitis consisting of small papules and vesicles develops. Pyodermic and impetigo-like areas are frequent, and in exceptional cases may lead to superficial gangrene. The eruption tends to affect previously existing cracks and scratches due to mechanical or chemical trauma. The favourite sites are the hands and forearms, but the rash may appear on the lower part of the face and neck, upper part of the chest, lower extremities, and genitals, while in ex-

ceptional cases it may be widespread. As a rule there are no general symptoms apart from itching, but occasionally the patients suffer from feverishness, pains in the joints, limbs, and chest, and headache. Several of Gron's patients had stomatitis and gingivitis. The incubation period ranges from eight days to two months. Females are more frequently affected than males, and the eruption may undergo exacerbation during the menstrual period. The duration of the attack is from one to two weeks up to several months, but recurrences are frequent. Prophylaxis consists in rubbing into the skin an ointment composed of lanoline, boric acid, and zinc peroxide. Calcium chloride has been used internally to restrict the increased alkalinity of the blood caused by extreme heat.—K. Gron, *Urol. & Cut. Rev.*, p. 606, Sept. 1929.

Abstracts from Current Literature

MEDICINE

Further Experiences with Venesection in Congestive Heart Failure. Middleton, W. S., *Am. Heart J.* 4: August, 1929.

Studies had already been made by Eyster and Middleton on the value of blood-letting in congestive heart failure. They showed that great benefit may be obtained by relieving the strain on the heart in this way. The results, however, varied with the degree of myocardial reserve. If this was small the relief produced by lowering the venous pressure, and so lessening the diastolic filling proved to be only temporary, and eventually the venous pressure mounted steadily to or above its previous level.

The most important guide as to when venesection should be performed is the degree of venous hypertension. A venous pressure of 20 cm. of water, either maintained or ascending, is deemed sufficient cause. Almost invariably the venous pressure of a decompensated individual falls sharply with the blood-letting, and when the myocardial reserve is sufficient to react favourably to the relief obtained, this pressure remains lowered. A point is made, therefore, of the prognostic value of the venous pressure curves after blood-letting in congestive heart failure.

In the paper under review, details are given of 26 venesections in 22 subjects. As a rule, 500 c.c. of blood were withdrawn. The immediate results were favourable in all of the 18 individuals who were bled a single time, and on 7 of the 8 occasions on which a second phlebotomy was required in the remaining subjects. So that the early response to venesection was satisfactory in 14 of 22 cases of congestive heart failure. On the whole, a fall in the venous pressure (8 cm. of water being taken arbitrarily as an adequate immediate response) was accompanied by definite clinical improvement. But in two cases failure to effect an adequate fall in the venous pressure did not prevent clinical improvement.

A survival of 45.4 per cent is reported in this group, and an apparent prolongation of life is claimed in an added 22.7 per cent.

H. E. MACDERMOT

A Case of Probable Antenatal Tuberculous Infection. Morley, R. H., *Arch. Dis. Child.* 4: 22, Aug. 1929.

This is an account of a case of miliary tuberculosis in an infant of 7 weeks, in whom the facts seemed to point to the infection having taken place before birth, probably through the

placenta. The child, a male, was born at full term, under normal circumstances, and weighed 7 lb. It was in good health and was put to the breast in the usual way. Development was satisfactory for four weeks and then the infant began to have diarrhoea, lose weight and refuse his food. He went from bad to worse and eventually died.

At post mortem the liver showed generalized tuberculous lesions of a miliary nature. The celiac glands between the head of the pancreas and the liver showed an advancing caseating tuberculous lesion with central cavitation. The spleen was riddled with miliary tubercles. The kidneys contained a few tubercles of the crude caseous type. The mesenteric glands showed tuberculous foci of a more recent stage than those in the celiac group. The lungs had extensive tuberculous involvement of the crude yellow type and many fine miliary tubercles. The bronchial glands were the seat of early caseating tuberculosis. Scattered miliary tubercles were found in the adrenals, the gastric and intestinal mucosae, the pleurae and the myocardium.

The histological examination showed two types of tuberculous development in the liver which could fairly certainly be said to be of different stages, the first being of some weeks' standing and the second probably of only a few days' to a week or so. The lesions in the other organs, especially the celiac glands, were, in general, of the second type; there was great necrosis with little reaction of the neighbouring tissues, and enormous numbers of tubercle bacilli.

The argument for its being an antenatal infection is based on the early age at which the child died, and the pathological character and distribution of the lesions. It seems unlikely that lesions so far advanced as those found in the liver and celiac glands could have originated within the child's short life. Again, it was highly significant that the celiac glands should be so greatly affected in contradistinction to the slighter and more recent process in the mediastinal and mesenteric groups. This is taken as indicating a direct infection from the placenta.

Investigation revealed no suggestion of active tuberculosis in the parents. The father's chest showed slight flattening on the left side, with a little impaired resonance, but there were no râles, the sputum was negative, and the x-ray showed increased root shadows only. The only other possibility allowed was a latent tuberculosis of the genital tract in the mother, of

which however, there was no clinical or other evidence. The home surroundings were healthy and the child never came in contact with any recognized tuberculous subjects. The placenta evidently was not specially examined, but it showed no obvious signs of disease.

H. E. MACDERMOT

Etude de 50 autopsies d'enfants vaccinés au BCG et morts de maladies non-tuberculeuses. (A study of fifty autopsies on children vaccinated with BCG who died of non-tuberculous disorders.) Zeyland, J. and Piasecka-Zeyland, E., *Ann. d. l'Inst. Pasteur* (Supp.), 42: 61, Dec. 1928.

From the findings in the fifty autopsies in question the authors deduce the following conclusions.

BCG is harmless and does not produce tuberculous lesions under the conditions of immunization, i.e., where the vaccine had been given in the ordinary way by the mouth, either in the case of normal children or in those who are premature and feeble. The bacillus, when given by the buccal route, can pass through the intact wall of the intestines. The retention of the BCG vaccine within the economy of the infant, even when enfeebled by illness, does not increase its virulence. BCG by itself can provoke anti-tuberculosis allergy. It is imperative to keep the vaccinated child from possible infection with tuberculosis for four weeks after vaccination, in order to establish immunity.

A. G. NICHOLLS

Insulin Resistance and Bronze Diabetes, Root H. G., *New Eng. J. Med.* 201: 201, Aug. 1, 1929.

No case of true uncomplicated diabetes in which insulin treatment has been unsuccessful in reducing the sugar of the blood or urine has been demonstrated. A temporary need for 200 to 500 units of insulin in 24 hours in the presence of such an emergency as coma is not an instance of "resistance." The insulin requirement of a totally depancreatized human being is unknown. If a man required as much as a depancreatized dog in proportion to weight he would require at a weight of 150 pounds between 200 and 300 units a day.

A case is reported because of the apparent ineffectiveness of 1,680 units of insulin daily; it was explained only at autopsy, which showed that it was a case of hæmochromotosis with steady loss of function of the islands of Langerhans and death in coma. Although anatomical evidence of destruction of cells of the liver, heart, and other tissues were marked, the interference with function was preponderantly manifest in the pancreas.

A great variety of cases cited as relatively refractory to insulin have been reported. They

may be grouped as follows: (1) renal glycosuria; (2) complicating disorders of the pituitary, thyroid, or adrenal glands; (3) infections; (4) cardiac complications with decompensation; (5) lesions of the skin; (6) acidosis; (7) cancer; (8) lack of muscle tone; (9) cirrhosis of the liver; (10) hæmochromotosis (bronze diabetes); (11) atheromatous cases; (12) disadvantageous combinations of diet and insulin; (13) unexplained cases, mildly resistant.

LILLIAN A. CHASE

The Therapeutic Value of Irradiated Milk in the Treatment of Rickets. Watson, C., Finlay, T. Y., and King, J. B., *Lancet* 2: 704, Oct. 5, 1929.

The value of irradiated milk as a form of anti-rachitic therapy has been chiefly stressed by various German writers in the recent literature. The present workers have conducted clinical experiments to test the validity of this claim and to appraise the values of various methods of irradiation. The technique of two of these methods is outlined. One objection to the process is the change in taste of the milk after treating, but this has been apparently overcome by the Scheidt method. Remarkable therapeutic results were obtained in the rapid calcification of bones as seen clinically and examined by many x-ray studies at short intervals. Not only were flord cases cured in a very short time, but cases which had shown very slow progress under months of intensive anti-rachitic treatment (including ergosterol, cod liver oil, irradiated cod liver oil, and quartz lamp exposure) gave evidence of a similar rapid response. A word of caution is given as to the danger of over-dosage with so potent a remedy and it is suggested that only part of the daily milk intake be irradiated. The suggestion is also put forth that this may prove of definite value in the treatment of such other disorders as those incidental to pregnancy, lactation, malnutrition, bone disease, and some forms of tuberculosis.

J. B. ROSS

Order of Birth of Mental Defectives, A survey of 10,455 retarded children in the Public Schools of Massachusetts. Dayton, N. A., *Jour. Heredity* 20: 219, 1929.

Intelligence and Size of Family. Dayton, N. A., *Jour. Heredity* 20: 365, 1929.

Dayton was testing in the first of these studies the validity of the theory that the mentally deficient child is more frequently the first or the last of the family. He found that in these cases the retarded child was not more liable to occur in any one place in the family than in any other; in other words, the order of birth held no significance from the standpoint of the production of the mental defect.

Families having the more serious grades of mental defect were larger than those in which the child was merely retarded.

In the second paper, Dayton investigates the size of the family in connection with the problem of mental retardation, and differentiates between the native and foreign born groups of mothers. Although the foreign born mothers form only 43 per cent of the population of the town surveyed, they form 68 per cent of the mothers of the retarded group and 75 per cent of the mothers of the mentally defective. Thus the larger part of the mentally deficient children are coming from the foreign mothers. Allowance was made in this analysis for the fact that the foreign born children have the handicap of a foreign language to struggle with. The native born mothers of the mentally retarded children had larger families than the native born mothers of the same age groups in the general population. This was true for the foreign born mothers under thirty; over thirty, the foreign born mothers of the mentally retarded had fewer children than the foreign born mothers in the population at large. The families with children in the lower levels of intelligence are twice as large as the families with children in the higher levels of intelligence.

MADGE THURLOW MACKLIN

Industrial Workshops and Their Importance in Relation to Placing the Handicapped. Crain, R. B., *J. Indus. Hyg.* 11: 257, Oct. 1929.

The mental and physical deterioration which often results from prolonged idleness, not to mention the economic waste therefrom, prompted the Tuberculosis and Health Association of Rochester and Monroe County (N.Y.), to organize in 1919 what was known as a Curative Workshop. This workshop at first gave occupational therapy only. Later, in 1923, a reorganization took place; the old Curative Workshop was continued, and a new Industrial Workshop added. The purpose of the curative workshop is occupational therapy, that of the newer industrial workshop is gradually to reintroduce men into industry, and to supply them with part time work at which they can earn a little money.

The combined shops act, (1) as a laboratory in which may be determined the employability of disabled persons, thereby relieving industry of the burden of conducting the same experiment; (2) as a demonstration to industries at large that it is feasible by proper placement to continue within their own ranks many employees considered as disabled and non-productive.

FRANK G. PEDLEY

SURGERY

Gas Gangrene in Compound Fractures. Boland, F. K., *Ann. Surg.* 90: 603, Oct. 1929.

Gas gangrene is the most serious complication of compound fractures. It occurred in 19 per cent of negro and 7 per cent of white patients admitted to the Grady Municipal Hospital. The author reports a series of 15 cases; 11 males and 4 females. The ages ranged from 5 to 52 years. The mortality was 40 per cent. All published series give a larger percentage of cases in the lower extremity. This is possibly due to (1) that the lower extremity is more exposed; (2) that the tight muscles about the tibia furnish better ground for anaerobic bacilli; and (3) that compound fractures are probably commoner in the leg.

Signs may be present in from 6 to 72 hours; the average is 24 hours. Probably the first symptom is a pulse rate faster than would be expected. The temperature may be elevated. There is a leucocytosis of from 15,000 to 20,000. The patient may be restless, anxious and complain that the dressing is too tight. Examination should be made at once; smear and culture taken. X-ray sometimes demonstrates gas before bubbles are seen. The odour is usually an early sign.

Treatment of the gangrene alone is indicated. Operative interference is demanded. All obviously and supposedly damaged tissue, except the skin and important nerves, should be excised. Adjacent tissues are widely exposed by multiple incisions. The best results have been obtained by the application of the Carrel-Dakin technique. Dressings should be few and loose. Upon the first appearance of extension high amputation should be done. Blood transfusion is of no appreciable value.

Anaerobic antitoxin was given in the last 8 cases. The most efficient is the polyvalent preparation. Injections were given intravenously. Four of these 8 died. All patients now admitted with compound fractures are given polyvalent anaerobic serum. There were some marked reactions, pyrexia and urticaria, after small doses.

STUART D. GORDON

Failures after Cholecystectomy. Cattell, R. B., and Kiefer, E. D., *J. Am. M. Ass.* 93: 1270, Oct. 26, 1929.

In this article the problem of cases not doing well after operations on the gall bladder is considered. The operation of cholecystostomy was less satisfactory than the surgical procedure mentioned above, so that cholecystostomy should, apparently, be used only in exceptional cases.

A considerable number of patients whose gall bladders were removed were not relieved of their symptoms. (1) In some cases there was co-exist-

ing disease of the gastrointestinal tract. (2) Sometimes the operative procedure itself had been faulty—stones left in, injury to the common duct and so on. The percentage of deaths was unduly large. (3) The diagnosis may have been wrong.

The authors think that one reason for the poor convalescence and perhaps death of some cases has been the inclusion of operations on other parts of the abdomen. Confining the surgical intervention entirely to the gall bladder has been a wise move. Another vital point is the making doubly sure that no stones are left in the common duct. As regards coexisting conditions, an irritable colon has often been found the cause of continued symptoms.

Post-operative care should include avoidance of obesity, which frequently aggravates the picture, administration of hydrochloric acid in cases with achlorhydria, and a diet of non-irritating foods. Disturbed function of the colon is to be kept in mind in these cases.

Another result of experience is the realization that it is in operations on patients who have no gall stones that the most unsatisfactory results are obtained; which teaches us that these patients should be managed medically as far as possible.

P. M. MACDONNELL

Diverticulitis. Spriggs, E. I., *Brit. M. J.* 3586: Sept. 28, 1929.

Three stages are described. The pre-diverticular state and the stage of formed diverticula are termed diverticulosis. Diverticulitis refers to inflammation of the diverticula and adjacent bowel wall. Each stage progresses to the next, and all may be present at the same time.

Diverticula may occupy any part of the circumference of the large bowel. They are most frequent in the pelvic colon. The pouches are near to, but not at, the tenia. Formed diverticula were found in 10 per cent of 1,000 consecutive x-ray examinations. They may be large with wide necks, or small with narrow necks. Their etiology is unknown; they may be pulsion pouches, secondary to inflammatory changes in the bowel wall. Constipation is not a factor, the disease being twice as common in males. Aperients may be a cause in that they produce an abnormally liquid faeces. Diverticulitis is associated with infected foci, particularly about the teeth.

Clinically, there may be abdominal discomfort, not related to food, situated in the lower left quadrant. This may be intermittent. Constipation or diarrhoea may be present. Occasionally a sausage-shaped mass may be felt in the left iliac fossa. If acute inflammation is present there is pyrexia and vomiting. Hæmor-

rhage may occur, but is not usual. There is a liability to lumbago, sciatica, and shingles.

Radiologically, there may be (1) shadows of diverticula; (2) rounded or serrated, unopaque intrusions into the lumen due to swollen mucosal folds giving no shadow; (3) spike- or palisade-like projections of barium shadows representing deformed and thickened haustra. No variation in shadows is seen in serial films. Pathologically, there is a chronic inflammation of the pelvic colon involving all the coats. Rarely there is ulceration of the mucous membrane. Abscesses may be present. Narrowing may be produced by fibrous thickening of the bowel wall.

Obstruction may be produced by inflamed mucosal folds, or by fibrous constriction of the bowel wall. The former may be relieved by enemata of warm oil. If diagnosed early the disease may be checked indefinitely by suitable treatment. The prognosis is grave if abscesses are present. The treatment consists in the exhibition of a bland diet, fruit and vegetables in abundance, but meat should be given sparingly. The entire gastro-intestinal tract should be kept as clean and healthy as possible. Any source of sepsis should be removed. *B. acidophilus* in milk appears to be of value. Regular evacuation is important. Aperients are best avoided. Paraffin oil may be used. Colonic irrigations of saline every other day at low pressure are valuable. Massage is contra-indicated.

Operation is required for perforation, obstruction, abscess, or fistula. Colostomy is required for obstruction. The excision of the affected bowel should only be attempted after a prolonged medical regime without improvement. Preliminary cæcostomy is of value if the bowel is gradually becoming obstructed. There is no justification for the excision of the affected bowel because of the fear of inflammatory changes.

STUART D. GORDON

Wie viel kann vom Dünndarm des Menschen entfernt werden ohne dass sein Leben dadurch gefährdet wird? (How much of the small intestine can be removed in man without danger to life?) Tuomikoski, V., *Acta Chirurg. Scand.* 65: 375, Aug. 14, 1929.

The author has studied the case of a man in whom an extensive resection of the small bowel had been done, whereby only 80 to 90 cm. had been left behind. The patient is well some seven years after the operation, and is able to do moderately heavy manual labour. The utilization of food was good in this particular instance. The author concludes that there is only immediate danger to life when so much of the small intestine is removed that only about half a metre remains. By a few approximate

measurements at laparotomies the author has found that half a metre is the minimal length necessary to permit of anastomosis between the cut ends of the bowel without the production of tension.

A. G. NICHOLLS

PÆDIATRICS

Infantile Pyloric Obstruction: Preliminary Report of its Allergic Nature. Cohen, M. B., and Breitbart, J., *Am. J. Dis. Child.* **38**: 741, Oct. 1929.

The authors consider congenital pyloric stenosis and pylorospasm as one entity under the term "infantile pyloric obstruction" and identify the mechanism of its production with the anaphylactic shock reaction—smooth muscle spasm, œdema and exudation.

An allergic family history was obtained in 40 per cent of 27 cases, and 44 per cent of these cases showed some such manifestations as eczema, asthma, drug eruption, vasomotor rhinitis or angioneurotic œdema before reaching the age of twelve years. Immunological studies were made on four infants at the time of the pyloric obstruction. Direct skin testing showed sensitivity to egg, milk, or cereals in the four cases, and in three the indirect method (local passive transfer technique) gave positive results. Two cases studied later in life had developed eczema; one was sensitive to egg, the other to milk.

The authors believe that infantile pyloric obstruction is an allergic phenomenon; that the sensitization may occur at any time *in utero* or after birth; that the essential difference between those cases with organic obstruction due to hypertrophy and those without hypertrophy depends upon the time, frequency, and severity of the allergic shock. They hold the opinion that pylorospasm and pyloric stenosis cannot satisfactorily be differentiated except by the end-result. They state that x-ray examination frequently leads to a wrong diagnosis. No mention is made of abdominal tumour, the cardinal sign of pyloric stenosis. Case histories are given of three patients; all were cured by atropine and the substitution of cow's milk for mother's milk.

A. K. GEDDES

Displacement of the Heart in Pneumonia in Childhood. Tallerman, K. H., and Jupe, M. H. *Arch. Dis. Childhood* **4**: 230, August, 1929.

Clinical reports are given and x-ray plates reproduced of five cases in which during an attack of pneumonia the heart deviated toward the side of the lesion and as recovery ensued slowly resumed its normal position. Four of the patients were less than one year of age; the fifth was six years old. The diagnosis in three cases was bronchopneumonia and in two true lobar

pneumonia. In each case the right lung was involved, the heart deviating toward that side.

Two factors are responsible for this displacement: first, a traction exerted by the affected lung due to its shrinkage and partial collapse; second, a push from the uninvolved lung distended by emphysema. Since the heart deviates during the acute stage of the disease and subsequently resumes its normal position, fibrosis cannot be a factor. The authors believe that this phenomenon would be found more frequently in the pneumonias of childhood if its occurrence were more widely known.

A. K. GEDDES

Dietary Control of Dental Caries. Boyd, J. D., Drain, C. L., and Nelson, M. V., *Am. J. Dis. Child.* **38**: 721, Oct. 1929.

In 1928 these writers reported the arrest of dental caries in diabetic children on a controlled diet. Subsequent examinations of the teeth in these patients have confirmed their observations. Further studies were made on three groups of children. The first group was placed on a weighed diabetic diet. The second group, composed of children of pre-school age in the home, was given a diet that contained protein, fat and carbohydrate in liberal quantities, candy being allowed after meals. The third group was made up of four girls with celiac disease, whose calories were supplied chiefly as protein and simple carbohydrates, with practically no fat. The only features common to the three experiments were supervision of the diet, adequate protein and caloric intake, and high mineral and vitamin content. Each child received cod liver oil, orange or tomato juice, milk, vegetables and fruits daily. At the beginning of the experiment each child showed extensive active caries of the teeth, the activity evidenced by the softness of the exposed dentine. After about two months on the controlled diet, the caries was in every case completely arrested, the dentine having become of a stony hardness. Two of the children in group one were subsequently observed in hospital where they received the usual ward diet without any supervision as to the amount they should eat. In a few months dental caries was active and progressive.

The prevalence of caries in childhood and the infrequency of its arrest are explained on the ground that children's diets are seldom adequate because, lacking supervision, the food eaten depends upon their likes and dislikes. That acidity of the mouth is not a factor in causing decay is shown by the observation that there is no constant change in the reaction of the saliva after arrest of caries. The culpability of sugars and starches in this connection is due to the fact that their excessive consumption leads to omission of essential factors from the diet. Active dental caries is

an indication of nutritional deficiency, and can be arrested by an adequate diet high in mineral and vitamin content.

A. K. GEDDES

Bacteremia and Skin Manifestations in Lipoid

Nephrosis: Schwartz, H., and Kohn, J. L., *Am. J. Dis. Child.* 38: 762, Oct. 1929.

Of nine patients (aged two and a half to twelve years) with lipoid nephrosis positive blood cultures were found in six. In one case there were two attacks of bacteremia in the course of the disease, in another case four. *Pneumococcus* type IV was isolated eight times, *pneumococcus* type III once, and a *hemolytic streptococcus* three times. Blood cultures were taken daily when there was any elevation of temperature; positive results were obtained only on the first three days of the fever.

In three of the nine patients cultures of the ascitic fluid yielded organisms; in an additional case they were found on smear only.

Four of the nine patients showed skin lesions, usually recurrent. An erysipelatoid type was seen four times, in one case progressing to abscess formation, from which a *pneumococcus* was grown. Other varieties seen resembled urticaria or prurigo.

Five of the patients died; in four peritonitis was the immediate cause of death. In the three autopsy reports given, there was no abnormality of the thyroid.

The authors describe two clinical pictures in those cases giving a positive blood culture. In the one type, acute abdominal symptoms predominate, the attacks subsiding in a few days, but often recurring, and having no influence on the oedema. In the second type, acute rhinopharyngeal infection is prominent, and may be a prelude to pneumonia or peritonitis.

A. K. GEDDES

The Frequency of Atrophy of the Subcutaneous Fat following the Injection of Insulin.

Fischer, A. E., *Am. J. Dis. Child.* 38: 715, Oct. 1929.

Atrophy of the subcutaneous fat about the site of insulin injections is much more common than has been supposed. Examination of 24 children who had received insulin for more than six months showed local fat atrophy in sixteen cases. In only four cases was it severe. Only two of fifteen children who had had insulin for more than a year failed to show atrophy. The theories advanced to explain the disappearance of the fat are discussed. The author believes that it is due to a low-grade inflammatory process.

A. K. GEDDES

Paroxysmal Sneezing in Whooping Cough.

Moncrieff, A., and Lightwood, R. C., *Arch. Dis. Childhood* 4: 240, Aug. 1929.

The authors report a case in a child aged

three years in whom for the major part of the duration of the disease paroxysmal attacks of sneezing occurred instead of whooping. A brief review of the scanty literature on sneezing as a substitution symptom in pertussis is given. The disease may be spread by failure to recognize those cases in which whooping cough takes the form of a persistent coryza with paroxysmal sneezing.

A. K. GEDDES

THERAPEUTICS

Klinische Erfahrungen mit Pyridium, einem neuen Harnantiseptikum. (Clinical experiences with pyridium; a new urinary antiseptic). Stern R., *Klin. Wchnschr.* 8: 1358, July 16, 1929.

Pyridium is a colloidal condensation product of hydrochloric acid and beta- and gamma-phenylazodiaminopyridin. In the test tube, when added to cultures of bacteria it manifests unusually powerful disinfectant properties. It acts best in the presence of the various cocci, and is somewhat less effective against *B. coli* and the dysentery bacilli.

Experiments on animals indicate that the drug is absorbed very quickly from the alimentary tract, and is, for the most part, excreted unchanged in the urine, which thereupon acquires bactericidal properties. Toxic effects were absent, unless when the drug was exhibited in relatively large amounts (0.3 gm. per kilo of body weight, in the case of rabbits).

Clinically, pyridium produces good results in cystitis and cysto-pyelitis. While not so effective in cases of infection with *B. coli* as in those due to cocci, the remedy is yet very satisfactory, as it is capable of bringing about improvement and cure more quickly than do the other more commonly employed drugs.

The author has treated many cases of acute and chronic cystitis with pyridium and is impressed with its value. No ill effect, either upon digestion or the general well-being of his patients, was noticed. Hæmaturia did not occur. It is to be noted, however, that pyridium imparts a reddish colour to the urine, which may lead to the wrong diagnosis of hæmaturia. Therefore, the patient to whom the drug is administered should be warned of this particular effect, so that he will not be unnecessarily alarmed.

The drug is absorbed to some extent by the mucous membrane of the bladder, to which fact some of its undoubted efficacy may, perhaps, be attributed.

The dosage employed by Stern is one to two tablets of 0.1 gm. three times a day for five days. In very obstinate cases he gives 0.2 gm. three times daily over many weeks without interruption.

A. G. NICHOLLS

Obituaries

Dr. Frederick Montizambert, C.M.G., I.S.O., M.D., F.R.C.S.E., D.C.L. Dr. Frederick Montizambert, former Director-general of Public Health and sanitary adviser to the Dominion Government, died at his residence in Ottawa on November 2nd, 1929, after a prolonged illness.

One of the most prominent members of the medical profession, the work of Dr. Montizambert on matters pertaining to hygiene contributed much to the welfare of the Dominion. Despite the weight of his eighty-seven years, he took an active interest in public affairs until recently.

His service with the Dominion Government was lengthy. Appointed in 1867 as Canada's first quarantine officer, he served at the Grosse Isle station until 1899 when he was transferred to the capital. He retired in 1919, when the creation of the federal Department of Health made his office obsolete.

Dr. Montizambert was born at Quebec City, in 1843, son of the late Hon. E. L. Montizambert and Lucy Bowen, daughter of the late Chief Justice Bowen. He received his preliminary education privately in Quebec, in the Montreal High School, the Upper Canada College, Toronto, and his degree in medicine from Edinburgh University in 1864. Appointed medical superintendent of the St. Lawrence service in 1869, he was stationed at the quarantine station at Grosse Isle. He became General Superintendent in 1894, and Director-general five years later. He served as principal medical officer for the Quebec Military District during the Fenian Raid in 1866, for which he received the medal and clasp.

Surviving Dr. Montizambert are four daughters, the Misses Tudor and Mildred, at home; Mrs. E. M. Hale, at Ottawa, and Mrs. Charles Russell, of Toronto; and one son, Col. Harold Montizambert, of Victoria, B.C.

AN APPRECIATION

The long career of a distinguished public servant ended on November 2nd in the death at Ottawa, in his 87th year, of Frederick Montizambert.

For more than half a century (1865-1920) previous to the formation of the Department of Health at Ottawa, the public health work of Canada was carried on almost single-handed by the Director-General. Under his direction the quarantine and Marine Hospital services and laboratories of both coasts and at Grosse Isle in the St. Lawrence were developed. The fine commanding figure of this courtly gentleman, towering head and shoulders above his fellows, has been conspicuous at the public health gatherings of North America since their earliest days. He was President of both the American and Canadian Public Health Associations, and to his energy and ability much of the public health progress on this continent must be ascribed.

The younger generations of public health men owe much to the fine public spirit, the wise counsel, and the friendship of Dr. Montizambert. He is a notable example of the public servant seen all over the British Empire, whose greatest reward is commonly to be found, at the end of his career, in a sense of duty well done.

The writer wishes to acknowledge his personal loss of a fine friend and wise counsellor, and to add this token of respect to the memory of one of Nature's gentlemen.

When we met in Ottawa it was Dr. Montizambert's custom to invite the writer to luncheon, after which, and a smoke, he would stretch his long legs and say: "Well, this inconsiderate government ex-

pects us to work between meals."

Present at the birth of the public health work of Canada, Dr. Montizambert witnessed the ravages of typhus (of which he himself was a victim) and of cholera among the early immigrants. He saw the evolution of the work of preventive medicine from the mists of empiricism to the scientific atmosphere of the present; he observed the advance of curative medicine and surgery from a similar empiricism to their erection on a scientific basis. But what one best remembers are his kindly qualities, his genial smile, his fervent hand-grasp, and his "God bless you, my dear boy!"

JOHN W. S. McCULLOUGH



Dr. F. Montizambert

Dr. John Ernest Coulter.

One of the best beloved of Winnipeg physicians, Dr. J. E. Coulter, died on November 2nd, at the Winnipeg General Hospital, at the age of sixty, after a long illness. For a number of years he had been Registrar of the College of Physicians and Surgeons of

Manitoba, Lecturer in Obstetrics in the Faculty of Medicine, University of Manitoba, a Fellow of the American College of Surgeons, and a member of the honorary staff of Grace Hospital.

Born in Huntingdon, Quebec, in 1869, he came with his parents to Manitoba in 1879. His education was gained in the schools of Nelson, Morden, and at Manitoba College. In 1895 he graduated in Medicine from Manitoba College, practised medicine for ten years in Pierre, South Dakota, and in 1905 returned to Winnipeg. He was a member of the staff of Grace Hospital from its inception. On the death of Dr. J. S. Gray, in 1918, he became Registrar of the College of Physicians and Surgeons of Manitoba. In 1914, he was president of the Winnipeg Medical Society.

He was a member of the Namakoosh Club at Fox Lake, east of Winnipeg, and was a devoted lover of nature. In his early days he was an athlete of distinction, and to the end of his life he maintained a keen interest in sport. A favorite hobby was mechanics, for he had rare skill in working metal and was a true descendant of Tubal Cain.

The funeral was held on November 5th, from St. Matthew's Church, to the St. James cemetery.

ROSS MITCHELL

Dr. John Orchard Todd. Dr. J. O. Todd, one of the leading practitioners of Winnipeg, died on October 29th, at the Winnipeg General Hospital, at the age of sixty-five. He was born in London, Ont., and his father, Capt. Frederick Todd, had served as an officer on the side of the North in the American Civil War. The lure of the west brought the young man, who had been attending Trinity College, Toronto, to Winnipeg, where he made the acquaintance of Dr. A. H. Ferguson, one of the leading surgeons of that day. Dr. Ferguson took a keen interest in the talented youth, and directed his thoughts to medicine as a career. Graduating from the Manitoba Medical College in 1890, Dr. Todd soon acquired an extensive practice. He became Professor of Practical Anatomy in his Alma Mater, and, later, after post-graduate work at St. Thomas's Hospital, London, John Hopkins University, Edinburgh and New York, was appointed Professor of Surgery. He was also Surgeon to St. Boniface, and Gynaecologist, later Surgeon to the Winnipeg General Hospital. On his retirement from active teaching he was appointed Professor Emeritus of Surgery in the University of Manitoba. He was the first surgeon in Manitoba to operate successfully on a typhoid perforation.

In his early days he was greatly interested in lacrosse, and was president of the Winnipeg Lacrosse Club.

In 1916 he went overseas, with the rank of Captain, in No. 4 Casualty Clearing Station, a unit recruited from Manitoba Medical College, and served two years until he was invalided. On his return to Winnipeg he became interested in the Victoria Hospital and served as chairman of the attending staff. On July 4th, last, he delivered an inspiring address to the nurses graduating from that institution. He is survived by his widow, née Evelyn Bigelow, whose early home was in Nova Scotia; a daughter, Evelyn; and a son, John. Dr. Wilfred Bigelow, of Brandon, and Dr. F. T. Cadham, of Winnipeg, are relatives.

The funeral took place on November 1st from Holy Trinity Church where for many years he had been a member and warden. The pallbearers were former fellow officers: Drs. S. W. Prowse, D. F. McIntyre, W. W. Musgrove, J. Pullar, F. A. Young, and Mr. H. F. Harman.

Dr. H. H. Chown, Dean of the Medical College during Dr. Todd's connection with that institution, writes: "He was a devoted and successful teacher. Always an earnest worker, he gave time and energy in social and philanthropic efforts. He was known as honourable, reliable, and strictly honest, both in word and in act."

ROSS MITCHELL

Dr. James Thomas Basken. With the death of Dr. J. T. Basken on September 25th, at the age of 67 years, Ottawa lost one of its oldest and most respected practitioners. He graduated at McGill in 1895 and shortly after settled in Ottawa where he acquired a very large general practice, his manly and sterling qualities securing for him the respect and confidence not only of his many patients but also of his fellow

practitioners and citizens of Ottawa generally. He always maintained an active interest in all matters pertaining to his profession and to the Ottawa Medico-Chirurgical Society in which he had acted as President.

He had been a member of the old St. Luke's Hospital Staff and of the Board of Governors, and, later, of the Consulting Staff of the Ottawa Civic Hospital. He was an active member of the McGill Graduates' Society of Ottawa, having filled the office of President.

Surviving him are his widow, formerly Barbara Carson of Montreal, and two daughters, Mrs. J. J. Hurd of Montreal and Miss Olive, at home.

H. B. SMALL

Dr. W. J. Charlton. A life of outstanding service was brought to a sudden close on October 19, 1929, when Dr. W. J. Charlton, of Weston, Ont., collapsed as he was about to make a professional call.

Dr. Charlton was 73 years of age. He was born on a farm near Cooksville and received his early education at the Cooksville and Streetsville Public and High Schools. He graduated from the University of Toronto in 1884 and after serving two years as an interne in the Toronto General Hospital, established his practice in Weston. In 1887 he was elected Reeve of the municipality and served in that capacity five years. In 1902 he resigned to take a position on the Board of Education and acted on that board for twelve years.

In 1913 Weston was incorporated as a town, and Dr. Charlton was elected the first Mayor the following year. He resigned from his office in 1918. During the Great War he took an active part in recruiting work, and as the first President of the Weston branch of the Red Cross gave valuable service in that field. He acted as surgeon of the 127th and 220th Battalions. He was a member of a tribunal under the Conscription Act.

Up to the time of his death Dr. Charlton was a member of the staff of the Western Hospital. He served as Coroner for the County of York for the past forty years, and was a former Medical Officer of Health for Weston. He was elected first President of the Weston Horticultural Society in 1911, and was a former Master of Humber Lodge, A.F. & A.M. Dr. Charlton was connected with the Central United Church of which he was Recording Steward for the past thirty-seven years.

Surviving are one son, Dr. Howard Charlton of Weston; two daughters, Mrs. C. Frank Moore, wife of Assistant Crown Attorney C. Frank Moore, Toronto, and Mrs. H. W. Westwood of Langstaffe; and two brothers, Robert of Meadowvale and G. A. of Winnipeg. His wife, who before her marriage was Miss Annie McNally, of Hanover, predeceased him twenty-six years ago.

Dr. James M. Henwood died in Toronto on September 14, 1929. He was born in Hamilton, Ont., the son of the late Dr. Edwin Henwood. He received his medical degree from Trinity University, Toronto, in 1889, and practised in Toronto for nearly forty years. Dr. Henwood was for many years Consulting Physician to the Continental Life Assurance Company and to the Home for Incurable Children.



Dr. J. O. Todd

Dr. Thomas A. Howell died in Paris, Ont., on October 8, 1929.

Dr. George E. Martineau, Superintendent of the Quarantine Station at Grosse-Ile, St. Luc, Que., died recently after a short illness. His death was a great shock to the Quebec people by whom he was much respected and appreciated.

Dr. Walter de Moulpied died at his home at Hemmingford, Que., on October 24, 1929, after a lingering illness. He was born on April 4, 1857, at Sabrevois, Que., the third son of the late Rev. Joseph de Moulpied and Sofia Ogier, both natives of Guernsey, Channel Islands.

He graduated from Bishop's College in 1881 when he won the Robert Nelson gold medal, awarded for special excellence in surgery.

After practising in Lowell, Mass., and West Hatley, he located at Hemmingford, Que., in 1884, where he followed his profession until 1927, when he retired from active practice due to ill-health. He is survived by his widow, Ella A. Martin, whom he married in 1885, one son and two daughters.

Dr. U. M. Stanley, Chairman of the Medical Board of the Canadian Order of Foresters since its inception in 1879, died in Brantford, Ont., on October 15, 1929, in his seventy-seventh year. He was a native of Lucan, and practised in Waterford and Brantford. Twenty-seven years ago he commenced full-time duty with the Order. His widow survives.

Dr. Samuel Stewart died on October 26, 1929, at Thamesville, Ont.

Dr. Arthur W. Thomas died on October 30, 1929, at his residence in Montreal. He had been ill four years. Dr. Thomas was born in Tara, Ontario, on September 28, 1879, later moving to Victoria, B.C., to live. He was a graduate of the University of Toronto, and had engaged in post-graduate study at Edinburgh University. He practised medicine in Montreal for twenty years until his illness.

Besides his widow, formerly Miss Agnes Scott, he leaves three sons, John, Arthur and Ray. Lorne, another son, died ten months ago. Others surviving are: his mother and father, Mr. and Mrs. James E. Thomas; two sisters, Mrs. Ann Cardner, and Mrs. Allan Johns, Portland, Oregon, and a brother Dr. Morrice Thomas of Victoria, B.C.

News Items

GREAT BRITAIN

National Statistics

The estimated population of Great Britain and Ireland shows an increase in 1928 over 1927 of 0.5 per cent in England and Wales, and of 6.02 in Scotland, with a decrease of 0.2 per cent in Northern Ireland, and of 0.3 in the Irish Free State.

Marriages in England and Wales equalled a rate of 15.4 persons married per 1,000 living, slightly less than in 1927, but slightly more than in the three previous years. The number of decrees *nisi* made absolute were 4,018, or 828 more than in 1927, and the highest on record.

The births registered were equal to a rate of 16.7 per 1,000 population or 0.1 above the rate for 1927. The illegitimate births were 45 per 1,000 of the total live births, a slight increase. The proportion of male to female births was as 1,044 to 1,000, also a slight increase. The great preponderance of males over females born during the war period has gradually declined, so that it is now approximately that of the pre-war period.

The Royal College of Surgeons

At a quarterly meeting of the Council of the Royal College of Surgeons, Lord Moynihan, the President, announced the receipt of £10,000, the bequest of Mrs. Eliza Macloglin for scholarships to be founded in memory of her husband, the late Mr. E. P. P. Macloglin, M.R.C.S. He also reported that Lord Melchett had offered a gift of £500 per year for seven years, to establish a research scholarship in the College.

An Innovation at St. Bartholomew's

A unique central anæsthetising plant is being installed in St. Bartholomew's Hospital, London, at a cost of more than £200,000. The plant, the first ever installed in a hospital in that country, will be erected in a building at the rear of the operating theatre. When

it is complete the gas will be led through pipes to the operation rooms, and this will do away with the present system.

Radiology for Cancer at Middlesex

A new administrative change was inaugurated last October at Middlesex Hospital. Through the munificence of an anonymous donor the hospital has been guaranteed five beds for seven years, these beds to be in the charge of the hospital radiologist in order that cancer patients who wish to avoid surgical operation can have radiological treatment if such treatment is considered advisable.

Cancer patients at Middlesex Hospital have hitherto been classed as surgical cases, being passed on to the radiological department only at the discretion of the surgeon. The new arrangement by which patients can go direct from their own medical adviser to the radiological department is not only a recognition of the growing importance of radiological treatment, but also marks a step forward in the closer co-operation between surgeons and radiologists. Middlesex Hospital, it is believed, is the first institution of its kind in Great Britain to adopt this arrangement.

The Harveian Oration

The Harveian Oration of the Royal College of Physicians of London was delivered in the College on October 18th, by Sir Wilmot Herringham to a full audience. The orator kept that audience deeply interested throughout a narration which, though related so easily, was replete with dated facts and quotations from sources contemporary with Harvey.

Search in contemporary literature and memoirs has brought to light no mention by the leaders of thought in Harvey's day that the sun of medical truth had risen through the mists of ancient and mediæval speculation; and while the work of Harvey went unnoticed by those among whom he moved, and who

might have brought the news to the public attention, details of his private life are similarly scanty. At considerable intervals Sir D'Arcy Power and Sir Thomas Barlow have resumed for us all that could be ascertained, and, since their researches, Sir Wilmot found that nothing of any consequence had come to light; but he was none the less able, by visualizing for his hearers the social milieu in which Harvey lived, to make "the little man," as he later affectionately called him, a real and intelligible character. As the personal medical attendant of Charles I. during that King's long struggle with the Parliamentary Party, Harvey was in relation with both sides. He accompanied the King to Scotland, and after the detention of Charles by the Scottish Army, and during his period of imprisonment, Harvey received passes through the belligerent lines, enabling him to continue his ministrations. And we get from what Harvey did not do a suggestive picture of his absorption in what he considered it his duty to do. For practically he never said anything at all about what he either saw or thought. In his writings he mentions the King and Queen but once, and then in the usual terms of respect, while he mentions the Parliamentary Party once also, a little critically in respect of his own professional relations. Thus Harvey was obviously a doctor and a physiologist, and obviously not either a courtier or a politician. In this connection Sir Wilmot's researches into Harvey's family, as represented by his several brothers, became pertinent, and the result of these researches made up much of his narration. All Harvey's brothers were engaged in trade. They were merchant adventurers, with London as the basis of their operations, while London was from the early days of the revolution the centre of the Parliamentary Party. The probability is, therefore, that as a doctor Harvey stood by his patient, but that, as far as family tendency or environment went, he was prepared to see eye to eye on many points with Parliament.

And yet the closing passages of the Oration suggested that the mental capacities of the unfortunate King may have appealed to Harvey's philosophic mind in favourable contrast to the impressions of the intellectual abilities of the protagonists of the revolt. For Sir Wilmot found the leaders of the revolution, though temporarily successful, lamentably wanting in statesmanship, and the results to be not at all commensurate with the drastic nature of their objects or the manner

in which they strove to obtain them. In a striking historical survey he drew a picture of the chaos into which the political and social life of the country had fallen by the close of the Protectorate, and, in so doing, he supplied, perhaps, the chief reason why the significance of Harvey's discovery escaped in an incredible fashion all popular notice. The people were too distraught to be able to respond to anything outside the pressing constitutional and practical needs of the country. Sir Wilmot Herringham's Oration will long be remembered for its style and the manner of its delivery; it was a happy compound of dignity and simplicity.

Jugoslavian Medical Visitors

A party of more than one hundred doctors from Jugoslavia assembled on October 19th in the Barnes Hall of the Royal Society of Medicine, where short addresses of welcome were given by Sir William Hale-White and Sir James Barry on behalf of the Fellowship of Medicine and the Yugoslav Society of Great Britain respectively. The Jugoslavian Minister was present, and Dr. Richard Burian, Professor of Physiology in the University of Belgrade, replied on behalf of the visitors. The medical faculties of Jugoslavia, he said, were young and not quite settled, being founded in a country worn out by the war, and without proper traditions in medical teaching. But they were earnestly trying to raise teaching and research, theory and practice to the level they had reached in other civilized countries, and in this endeavour nothing could be more helpful than close relations with the headquarters of British medicine. They hoped that these relations would become more and more close and cordial and that they would have the pleasure of welcoming British medical men to Jugoslavia, though their medical institutions were only at the beginning of their development. A few days ago they had had the privilege of seeing at Belgrade Prof. Leonard Findlay, of Glasgow, and had listened to a most interesting lecture from him. They would be happy if other representatives of British medicine and science would follow his example. Dr. Ainsworth Davis then exhibited Dr. R. Canti's film showing the cultivation of healthy and cancerous tissues under the microscope and the action of radium emanation upon them. This film had been lent by the British Empire Cancer Campaign.

NOVA SCOTIA

A new isolation hospital is being considered by the people of New Glasgow.

A fair recently conducted in the interests of the Highland View Hospital, Amherst netted nearly three thousand dollars for that institution.

Dr. E. Gordon Young, Professor of Biochemistry at Dalhousie University, has been made Vice-president of the Nova Scotian Institute of Science, and Dr. D. J. MacKenzie, Director of the laboratory of the Provincial Department of Health, has been elected to the council of the Institute.

The Halifax branch of the Medical Society of Nova Scotia held its first scientific meeting of the season at the Dalhousie Clinic on October 30th. Dr. K. A. MacKenzie discussed briefly the question of State Medicine. Drs. Mack and Mader presented interesting cases from the clinic, and several other members of the clinic staff read interesting case reports.

Dr. John Stewart, of Halifax, has presented a collection of surgical instruments, valued at \$500.00 to the Colchester Memorial Hospital, Truro. The presentation is in the nature of a memorial to Dr. Stewart's old friend, the late Dr. W. S. Muir, of Truro, to whose memory the operating room of the hospital is dedicated.

As a consequence of being struck by a motor car driven by Dr. H. D. Land, of Sydney, a young lad suffered a compound fracture of a leg and other injuries. The boy's father brought action against Dr. Land, and the Court awarded damages amounting to \$672.71. Dr. Land has appealed from this decision.

Dr. Louise Gowanloch and Dr. Arthur Walker, of Halifax, were successful in passing the October examinations of the Medical Council of Canada. Dr. Gowanloch is the wife of Professor Gowanloch, of the Department of Biology, Dalhousie University, and is Demonstrator in Biology at Dalhousie. Dr. Walker,

who is for the present located at Maracaibo, Venezuela, is a son of Dr. Smith L. Walker.

The Valley branch of the Medical Society of Nova Scotia met at the Nova Scotia Sanatorium, Kentville, on October 21st. The speakers were Dr. J. R. Goodall, of Montreal, Dr. Smith L. Walker, of Halifax, and Dr. H. R. Corbett, the radiologist of the sanatorium. Thirty members of the Valley organization were in attendance. Dr. A. F. Miller, the Superintendent of the sanatorium, and his staff, entertained the company at a much enjoyed dinner.

On the evening of October 29th, a class of seven young ladies and four young men were awarded the diploma of the training school of the Nova Scotia Hospital. The graduation ceremonies were largely attended, and were followed by a very enjoyable dance. Hon. G. S. Harrington presided, and short addresses were given by him, by the mayors of Halifax and Dartmouth, and by a former superintendent of the hospital. The principal address, that to the graduates, was given by Dr. E. V. Hogan. All the speakers referred to the splendid progress being made at the hospital under the able superintendency of Dr. Lawlor.

To the great regret of all her associates at the Dalhousie Clinic, Miss Maude Hall has severed her connection with the clinic. She goes to Ottawa, to be associated with Miss Smellie in the administration of the Victorian Order of Nurses. Miss Hall will be greatly missed in Halifax, where she has been indefatigable in good work, and will take with her the blessing of many of our poor folk, and the best wishes and confident expectation of her many admiring friends for every success in her new sphere of activity.

At the annual meeting of the Cumberland County branch of the Medical Society of Nova Scotia, which

was held at Amherst on October 14th, Dr. A. E. MacKintosh of Amherst, was elected President in succession to Dr. M. J. Wardrope, of Springhill. Dr. Harold Simpson, of Springhill, was elected Vice-president, and Dr. W. T. Purdy, of Amherst, was again chosen as Secretary. The sessions were held at the new Highland View Hospital. The society was addressed by Dr. J. R. Goodall, of Montreal, and Drs. S. R. Johnston and S. L. Walker, of Halifax. A very pleasant feature of the meeting was a dinner tendered by the Amherst profession.

The corner stone of the new Westwood Hospital, at Wolfville, was laid with due ceremony on October 22nd. The honour of pronouncing the stone well and duly laid fell to Mr. W. H. Chase, one of the most generous contributors to the new enterprise. Tribute was paid to Dr. C. E. A. DeWitt, who has very acceptably carried on a private hospital in Wolfville for many years, and who is withdrawing from this activity in favour of the new institution. Among the speakers was President Patterson, of Acadia University, who emphasized the value of a hospital to the community it serves. The new hospital is being built on a beautiful property which commands a fine view of far-famed Blomidon, the Basin of Minas, and the valley of the Cornwallis river.

In the early months of 1927, a limited outbreak of typhoid fever occurred in the town of Stellarton, which was attributed to infection of the water supply. The husband of a woman who died of the disease brought action for damages against the town. The case was disposed of by the Supreme Court in October, judgment being given in favour of the town. It was not proved that the town had knowledge, prior to the illness of the plaintiff's wife, that the water supply was or was likely to be polluted or contaminated, or that there was negligence on the part of the defendant corporation.

W. H. HATTIE

NEW BRUNSWICK

The Extra-mural Course of lectures was provided for New Brunswick in October by Dr. E. S. Mills and Dr. John Beattie, of Montreal. The meetings were held in Fredericton, Woodstock, Saint John, Moncton and Campbellton.

The meeting in Saint John was an especially well attended one. It was noted that the attendance comprised several of our most respected older members, notably, Col. Murray MacLaren, M.P., Dr. F. H. Wetmore, Hampton, and Dr. A. E. Emery, Saint John, as well as an increasing number of younger practitioners. Another group that deserves special mention consisted of Drs. Wm. Jenkins, of Gagetown, F. A. McGrand, Welsford, Dr. V. F. Connor from Lepreaux, and especially Dr. Wm. Gray, from Milltown, who had travelled the distance of ninety miles to attend this meeting.

The paper on the serum treatment of pneumonia, by Dr. E. S. Mills, was greeted with enthusiasm, as it holds out a hope of definite improvement in the mortality figures from this very deadly disease. A committee was appointed to approach the Provincial Government with a view to arrange that the Provincial Department of Health should assist in supplying the necessary serum for the treatment of pneumonia. This action was taken because at present the cost of the serum is rather high, and it was felt that an effort should be made to provide serum for patients who would otherwise be unable to pay for it.

Dr. Beattie is to be congratulated on presenting an ultra-scientific subject in a most pleasing and understandable manner in a combination of anatomical and physiological information. Dr. Beattie's remarks on "Researches on the central nervous system" were most interesting.

The regular meeting of the Council of Physicians and Surgeons of New Brunswick was held in Saint John in October. Dr. R. W. L. Earle, of Perth, was Chairman. The chief business was in reference to medical students' registration and medical registration.

Dr. G. Clowes VanWart of Fredericton was selected to represent New Brunswick at the third Conference on Medical Services in Canada, held on November 20th and 21st in Ottawa.

The meeting of the American College of Surgeons in Chicago was attended by Drs. L. G. Pinault, Campbellton, A. E. Macaulay, Saint John, V. D. Davidson, Saint John, D. C. Malcolm, Saint John, and G. A. B. Addy, Saint John.

A meeting of the executive of the New Brunswick Medical Association was held in Saint Stephen on October 31st. A large attendance enabled much business to be done in preparation for the 1930 meeting of the Society, and other routine business was attended to.

The Soldiers' Memorial Hospital at Campbellton is to be congratulated on the fact that in the recent campaign for the purpose of raising \$25,000.00 their expectations were exceeded, the total collections amounting to \$31,431.00. Such support of this institution speaks well for the satisfaction with which their efforts are regarded by their community.

The return of Dr. F. L. Kenney to Saint John was hailed with delight by his many friends. Dr. Kenney has spent the last year or two in Victoria, B.C.

Dr. J. C. Webster, of Shediac, has recently been confined to his home for some time by an injured knee. He is reported to be somewhat improved.

Dr. O. B. Evans, of Saint John, spent the last three months in Great Britain, attending the surgical course at the University of Edinburgh. On his return home Dr. Evans expressed himself delighted with the opportunities for study in Great Britain.

Dr. and Mrs. L. E. German have returned to their home in Campbellton, following a visit to Montreal.

Dr. E. W. Lunney, of Saint John, recently spent some time doing special clinical work at the Deaconess Hospital in Boston.

Dr. Stanley Bridges, of Saint John, spent two weeks in Boston recently, doing further work in paediatrics.

A very pleasant function at Chatham, N.B., was the complimentary dinner tendered to Dr. B. A. Marvin by the Sisters of the Hotel Dieu Hospital. At this dinner, his medical colleagues presented Dr. Marvin with a gold headed cane as a parting gift. Dr. Marvin will in future live in Moncton.

Dr. George Skinner, of Saint John, has recently returned from Great Britain where he spent six months in study. Dr. Skinner is receiving congratulations on having obtained the diploma of F.R.C.S. Edinburgh.

A. STANLEY KIRKLAND

QUEBEC

It is learned on reliable authority that Dr. Grant Fleming, Dr. St. John MacDonald, Dr. L. de L. Harwood, Dr. J. A. Baudouin, Dr. S. Boucher, Ald. A. A. DesRoches, Ald. (Dr.) Z. H. Lesage, Ald. (Dr.) A. D. Tessier, and Ald. (Dr.) H. A. Quintal, will compose the new civic Board of Health. Drs. Fleming and MacDonald will represent McGill University, and Drs. Harwood and Baudouin, the University of Montreal, according to the terms of the by-law, although no official announcement has yet been made by the universities. The balance of the board is to consist of the three medical doctors who are members of council, Drs. LeSage, Tessier and Quintal, Dr. Boucher, M.H.O., and Ald. DesRoches, chairman of the executive committee.

The city will contribute \$640,000 toward an anti-tuberculosis sanatorium to be created by the Bruchesi Institute, probably in the immediate vicinity of the city. This announcement was made, in the name of the Executive Committee, by Ald. A. A. DesRoches, chairman, in answer to the request for a large delegation representing the institute, including Hon. J. L. Perron, Minister of Agriculture, president of the Bruchesi Institute; Dr. J. E. Dubé and Dr. J. A. Jarry, J. B. Baillargeon, Hector Racine, Oscar Dufresne, T. O. Trudeau, L. M. Lymburner and Ald. Theodore Morgan.

Hon. J. L. Perron, pointed out that the resources of the institute were too limited to meet its obligations. Dispensaries had been established, aid had been given to families, and there was the David Camp for little girls. There was immediate need for 400 extra beds and the institute wanted to build outside the city limits, at a cost of \$1,600,000. The Provincial Government had promised to donate 60 per cent of the cost, and the city was asked to give the rest. Statistics were then given showing that the lowest death rates were where the proportion of beds per patient was highest. Saskatchewan, with only 46 deaths per 100,000, had 10 beds for every 10 deaths a year.

Canada, as a whole, had 53 deaths per 100,000, and only seven beds per 10 deaths; in the United States the proportion was 59 deaths per 100,000 and seven beds per ten annual deaths; France had 170 deaths per 100,000 and only three beds per 10 deaths a year, while the highest death rate was in Japan, where there were 321 deaths per 100,000 and only ½ bed per 10 deaths a year.

It was announced that Mr. Perron had donated \$10,000 for the establishment of a boys' camp at St. Hippolyte, next to the David Camp for girls, which will be opened next year and which will be called Perron Camp. Montreal needed 880 beds in hospitals at once, Mr. Perron stated, while at present there were only 612. Dr. J. E. Dubé showed that Ontario with 3,000,000 population had but 1,500 deaths a year, while Quebec with a population of 2,740,000 had 3,000 annually. Alderman DesRoches, in reply, congratulated the institute on its initiative. Addresses were not needed, he said, to convince the city of its need. He pledged the city to furnish the remaining 40 per cent of the cost of the new sanatorium, or \$640,000 in twenty years, which means an annual outlay of \$51,000 a year. In thanking the city, Mr. Perron, promised that the hospital would be ready in a year. "Tuberculous patients," Dr. Dubé said, "are public patients. They are dangerous to the rest of the population. We do not ask public subscriptions for the care of the insane or of criminals. We should not ask public help against tuberculosis. It is a Federal, Provincial, and civic trust and obligation to look after those stricken." The city at the same time promised to double its annual donation of \$900 to Camp David, an appendage of the Bruchesi Institute, and also to contribute to the new Perron Camp for boys.

Dr. J. C. Wickham was appointed by the Westmount City Council medical inspector for the scholars attending the Roman Catholic schools in Westmount.

GEORGE HALL

ONTARIO

The post-graduate course under the auspices of St. Michael's Hospital, Toronto, the program of which was given in the September issue of the *Journal* was held as scheduled during the third week of September.

The course dealt chiefly with clinical work in relation to the heart, lungs, and abdomen, and was organized by Dr. W. B. Edmonds in order to give practitioners an opportunity to keep pace with modern research work.

Forty doctors were in attendance. It is hoped that the registration next year will far exceed this number. The intention is to give the course annually and for one week.

The annual meeting of the South Waterloo Medical Society was held in Galt on the evening of October 3rd. Dr. A. S. Moorhead, of Toronto, gave an address on "Diseases of the rectum," after which a brief business session was held, at which the following officers were elected for the ensuing year: *President*, Dr. J. Leslie King, Galt; *Vice-President*, Dr. W. S. Hutchison, Hespeler; *Secretary*, Dr. John Seaton, Galt; *Treasurer*, Dr. C. Reist, Preston; *Correspondent to the Canadian Medical Association Journal*, Dr. Ward Woolner, Ayr.

At the close of the meeting, a very delightful banquet was held at the Golf Club. N. B. GWIN

MANITOBA

The Department of Health and Public Welfare and the Department of Education of Manitoba have opened a School of Social Science. Lectures will be given on the following subjects: Economics, Sociology, Psychology, Psychiatry, Legislation, Public Health, and Principles of Call Work. The courses of study at present necessary for a diploma will be for two years in sequence. The academic qualifications for admission to the school is matriculation, or an adequate period of social service. Special arrangements may be made for nurses working in isolated districts to receive instruction by correspondence.

On October 30th Shoal Lake Hospital was completely destroyed by fire, and despite the heroic efforts of Dr. Bardal and Miss Avison, the Matron, one infant, two weeks old, was burned to death. The other patients, nine adults and two children, were removed to safety by the nursing staff and citizens of Shoal Lake. The blaze is said to have started in the sterilizing room. The frame construction of the building and its distance from the centre of the town prevented the work of the fire fighters.

The institution was erected in 1902 by the Victorian Order of Nurses, and consisted of thirteen rooms for patients and an operating room. Both building and contents were insured.

The contract for remodelling the brick building at Bannantyne and Sherbrook, formerly owned by the W. R. Milton Company, which is to be used as a receiving unit for the sanatorium, has been let by the provincial government to J. McDiarmid Company, Limited. The contract price was approximately \$35,000. The building will be ready for use early next spring. A time limit of three months was set for completion of the work. Most of the work will be interior alterations. The building is located close to the General Hospital, and the heating plant will be connected with the hospital power house.

Dr. Edison Cunningham, (Man. '23), late of China, is taking post-graduate work at Moorfields (Royal London Ophthalmic Hospital), in order to obtain the diploma of D.O.M.S. His wife, née Dr. Gladys Story, (Man. '23), is at present with her parents at Vancouver where Dr. Cunningham will join her before returning to China.

ROSS MITCHELL

SASKATCHEWAN

At the monthly staff meeting at the Regina Grey Nuns' Hospital, Dr. D. S. Johnstone reported the case of a man with a fracture of the leg caused by being trampled on by a bull. The hoof of the bull penetrated the skin at the site of the fracture. Crepitation in the muscles over the site of the fracture was noticed the day after admission; in twenty-four hours the crepitation markedly increased. A diagnosis of gas gangrene was made, the affected muscles were removed, but death followed a day later. In discussing the case, Dr. Johnstone thought that in most instances the question of saving the limb interfered with the rational treatment, that of immediate amputation upon the diagnosis of gas gangrene.

Dr. U. Garreau presented a case of cerebrospinal meningitis complicated by paralysis of the arm. About twenty-five lumbar punctures were done; ten or twenty cubic centimetres of serum was injected each time. During the second week the cell count suddenly went up from 300 to 3,900, and the toxic symptoms increased. The serum was stopped, with marked improvement.

During the third week the child suddenly developed paralysis of the arm which cleared up in twenty-four hours. The child recovered.

Dr. H. Sieg presented a case of fractured ribs and clavicle due to being hit by a truck. The abdomen was acutely distended. Operation gave no relief, and the patient died two days later. A post-mortem examination showed a penetration of the right lung by the fractured end of the fourth rib; the pylorus showed no evidence of rigidity. There was no apparent cause for the obstruction.

At the monthly meeting of the staff of the Moose Jaw General Hospital the following case reports were given: "Death from supposed epilepsy" by Dr. Hugh Young, discussion by Dr. Knight and by Dr. Gordon Young; "Sarcoma of the distal end of the femur in a female child of thirteen years" by Dr. Gordon Young, discussion by Dr. Bawden; "Stomatitis" by Dr. J. Miller, discussion by Dr. Freeman.

Dr. E. Blatz, Professor of Psychology, University of Toronto, and Director of St. George's School for Child Study, Toronto, addressed the Women's Canadian Club in Regina on "Human behaviour." He was travelling under the auspices of the Canadian National Committee for Mental Hygiene. Dr. Blatz stated that out of every 100 children attending school it is estimated that 4 will one day be in mental hospitals. The object of the committee in their study was to find if this wastage could be reduced.

Dr. Gregoire Amyot has resigned the position which he has held for two years as director of the hospital at Ile la Crosse in northern Saskatchewan. He is the recipient of a scholarship at the University of Toronto and will study at the School of Hygiene for his D.P.H.

Premier Anderson has announced that the long discussed school for the deaf is to be built at Saskatoon, where they can take full advantage of the university facilities. LILLIAN A. CHASE

ALBERTA

With a view of securing further data on the question of services rendered by the medical profession to indigents, the College of Physicians and Surgeons of Alberta is taking a plebiscite of the members. Local municipal councillors too frequently assume no responsibility, knowing full well that the physician will render professional services regardless of any financial consideration. It is felt that there should be no more obligation for the physician to care for the health of the indigent, because he possesses the necessary knowledge, than there is for the merchant to feed the indigent hungry because he has the food in his store. The report on this question will undoubtedly be of value in putting the responsibility where the provincial government places it, namely, on the municipality.

Official nomination papers are in the hands of the profession calling for nominations, in the following districts, for representatives on the Council of the College of Physicians and Surgeons of Alberta: No. 1, Medicine Hat; No. 3, Banff and Red Deer; No. 5, Peace River; No. 7, Edmonton. Ever since the change in the manner and time of election, whereby one-half of the members of the Council are elected every year and hold office for two years, there has been a greater interest manifested in the elections. The College, also, holds an annual meeting at the time of the annual meeting of the Alberta Medical Association when the work of the Council is reviewed.

The Workmen's Compensation Board has made a ruling that "when wounds are dirty and infected, daily dressings are indicated and advisable and will be paid for, but if clean and healing, daily dressings are not necessary and will not be paid for."

Dr. D. S. Macnab, of Calgary, who has spent the last few weeks in Chicago, where he attended the Congress of the American College of Surgeons, and in Rochester, Minn., has returned home.

Dr. Ernest A. Hunt, son of Mr. W. G. Hunt, Associate Secretary of the Alberta Medical Association, who has been acting as assistant to Dr. J. D. Robinson at the Banff Sanitarium, has left for London, England, where he will spend the next two years in post-graduate work. Before leaving he was married in Regina to Miss E. M. Leitch of that city. Both are graduates of Toronto University. Miss Leitch graduated in Arts in 1928. Our best wishes are extended to them.

The following representatives went from Alberta to the Medical Services Conference, held at Ottawa on November 21st and 22nd. Dr. W. V. Lamb, of Camrose, and Dr. W. G. Anderson, of Wardlaw, represented the College of Physicians and Surgeons of Alberta; Dr. J. S. McEachern, of Calgary, and Dr. W. A. Wilson,

of Edmonton, representing the Alberta Medical Association.

The three physicians who have come to Alberta from Great Britain to work for the Provincial Department of Health have been placed at the following outlying points: Dr. Elizabeth Rodger, at Slave Lake; Dr. Helen O'Brien, at Lac la Biche; Dr. M. E. Percy, at Notikewin, Peace River District.

We are pleased to welcome Dr. R. D. Sanson back to Calgary, who had been transferred to Vancouver under the Department of Health and Pensions. Dr. Sanson practised in Calgary for many years before he joined the Army Medical Corps, with which unit he served in France, later becoming attached to the Pensions Board. Dr. D. W. Gray, of Calgary, has been transferred to Vancouver to replace him.

Dr. R. R. Hughes, has returned to Calgary, having spent some time in post-graduate work in Cleveland and other centres.

Dr. Angus C. McGugan, a graduate of Alberta University, has recently been appointed a Provincial Health Officer, succeeding Dr. R. B. Jenkins, who has accepted the position of Medical Health Officer for Edmonton.

Dr. T. R. Whaley, formerly of Alsask, is now practising in Vancouver. His practice at Alsask has been taken over by Dr. A. C. Bradford, of Edmonton.

Dr. P. P. Smyth, of Big Valley, a pioneer physician in this district, has removed to Ocean Falls, B.C., where he will practise. Dr. David Christie is practising in his stead at Big Valley.

Dr. T. B. Blow, of Calgary, has returned home, after having spent the past six months in Europe.

Dr. Buriak, who formerly practised at Radway Centre, has begun practice in Toronto, after a period of post-graduate work in the eastern United States.

There are now two physicians practising at the thriving oil town, Turner Valley, and one in the adjoining town, Black Diamond, namely, Drs. G. W. Hall and J. Kenny, in the former, and Dr. L. Weissgerber at the latter.

Dr. W. H. S. Scott, formerly of Acadia Valley, is now practising at Telfordville west of Leduc.

Dr. L. Mullens, of Toronto, has joined the staff of the Provincial Government's Central Alberta Sanatorium near Calgary.

G. E. LEARMONTH

BRITISH COLUMBIA

A commission to investigate hospital matters in Vancouver held sessions during the first week of November. This commission was appointed jointly by the Provincial Government of British Columbia and the City Council of Vancouver. The three commissioners are Dr. Malcolm T. MacEachern, Director of Hospital Activities for the American College of Surgeons, Chicago; Dr. A. K. Haywood, Superintendent of the Montreal General Hospital; and Dr. W. H. Walsh, Executive Secretary of the American Hospital Association, Chicago.

The Annual Golf Match for the Worthington Cup, which is open to medical men in Vancouver, was played on October 10th, under ideal weather conditions. Some seventy competitors were entered and Dr. G. H. Clement was successful in carrying off the trophy. Dr. D. M. Meekison had the highest gross score, winning a sterling silver cigarette case donated by MacDonald's Prescriptions, Limited. Other members winning were Dr. W. A. Whitelaw and Dr. Colin Graham, each getting a surgical bag donated by the B. C. Stevens Company and the Canadian Surgical Supplies, Limited respectively. Dr. D. M. MacKay won the prize for the short hole, and Dr. E. E. Day a prize for the longest drive.

The festivities terminated in a memorable dinner

at the Jericho Country Golf Club. Dr. Dan. McLellan was elected Captain, and Dr. E. E. Day, Vice-Captain for the ensuing year. Among non-competing players, the Drs. McEwen, of New Westminster, were noticed.

Dr. Hugh Smith, late of the C.A.M.C., and formerly of Toronto, Ont., who has been practising in India since the War, is spending the winter months in Vancouver.

Dr. Gordon James, formerly of Vancouver, is now associated with Dr. D. L. Learoyd.

Dr. J. A. West, of Prince Rupert, B.C., has returned after an extended visit in England.

Dr. H. W. McGregor, of Penticton, B.C., attended the annual meeting of the American College of Surgeons in Chicago in October.

Dr. G. S. Gordon, of Vancouver, B.C., returned on October 6th, after spending several months in England and on the Continent.

Dr. W. T. Kergin, of Prince Rupert, B.C., is at present spending several months visiting eastern medical centres.

C. H. BASTIN

UNITED STATES

The Dedication of the Wilmer Ophthalmological Institute in Baltimore

On October 15th and 16th the new building of the Wilmer Ophthalmological Institute in Baltimore, an integral part of the Medical School of Johns Hopkins University, was dedicated with appropriate exercises. This institute and foundation is a tribute to the Professor of Ophthalmology in the Medical School, Dr. W. H. Wilmer, who has been for many years keenly interested in the development of his specialty.

The credit for suggesting the foundation of this institute should go to Mrs. Henry Breckenridge, the wife of the Assistant Secretary for War in the Wilson administration. The Foundation was incorporated in 1922, and in 1925 the General Educational Board granted \$1,500,000 towards a fund of \$3,000,000, to finance it. The building was begun in 1927 and was completed about a year and half ago.

The Wilmer Institute serves as the Eye Clinic and Department of Ophthalmology of the Johns Hopkins University and Hospital and its scope embraces special research as well as the care of patients. Seventy-two beds are provided and already this number is proving insufficient. Gifts totalling \$60,000, to establish research fellowships, have been announced, notably from Mr. Andrew H. Mellon, the Secretary of the Treasury, his brother, Mr. Richard Mellon, and Mr. Adolph Lewisohn, of New York.

The proceedings at the dedication, which lasted two days, were most interesting, particularly as many of the foremost ophthalmologists from America and abroad were present, including the venerable Prof. E. Fuchs, of Vienna.

The principal addresses were given by Dr. George de Schweinitz, of Philadelphia, who reviewed the history of the scientific study of the eye, the treatment of its diseases, and surgery as it is applied to these. Dr. de Schweinitz said that the best method

for studying diseases of the eye was in just such institutions as the William Holland Wilmer Institute, where special problems could be studied in their relation to the other branches of medicine, where, in short, other knowledge which might be helpful could be brought to bear on them from all sides.

On the second day of the exercises the chief address was given by Sir John Herbert Parsons, of London, who spoke on "Some theories of colour vision."

A. G. NICHOLLS

The William H. Welch Medical Library

The new medical library of Johns Hopkins University, Baltimore, and the Department of the History of Medicine were inaugurated with appropriate and delightful ceremony on October 17th and following days.

The building is situated on East Monument Street, not far from the School of Hygiene, and presents a rich and dignified appearance. It is designed in a plain Italian Renaissance style which is singularly attractive. It is well laid out internally and much of the charming effect is due to the free use of many kinds of richly coloured marble. The cost was just a little less than \$600,000, and there is available about \$55,000 yearly for maintenance. There is accommodation for 500,000 books.

The stacks, which are identical with those recently installed at the Vatican, occupy the centre of the building and extend for the full three storeys. The first two floors are taken up with the library proper and the third floor is devoted to the Department of the History of Medicine. In this building are concentrated the books belonging to the Faculty of Medicine, the Johns Hopkins Hospital, and the Department of the History of Medicine.

At the landing, half way up the main staircase is a bronze bust of Dr. Welch, and at the top a small antique marble statue of Esculapius.

The "Great Hall," intended for use on formal occasions, has plain walls, quietly coloured, with a large fireplace at one side, over which is a pertinent motto. At the end of the room is Sargent's well known picture of the Four Doctors (Welch, Osler, Kelly, and Halstead). The ceiling is very ornate, bearing in red and gold the signs of the zodiac, various medical insignia, and the seals of Johns Hopkins University, the Hospital, the State of Maryland, and the city of Baltimore.

In opening the proceedings on the first day, Dr. Joseph S. Ames, the President of Johns Hopkins University, read a number of telegrams from distinguished persons abroad, including one from Drs. Roux and Calmette of the Pasteur Institute. Mr. Edward L. Tilton, the architect of the building, in a graceful and witty speech, delivered a golden key of the building to the trustees of the library, which was accepted by Mr. Blanchard Randall, who said that the real key to the building was the personality of the great figure in medicine after whom the building was named, Dr. Welch himself.

Dr. Harvey Cushing, of Harvard University, who had been the first professor of surgery at Hopkins, then delivered the inaugural address. He referred at the beginning to libraries in which the books remained undisturbed in their shelves and expressed the hope that in this library the books would be alive to those who were privileged to use them. In recent times, various subdivisions of medicine had developed and had worked more or less individually, developing their institutes of the various sciences.

Too often physicians were too busy practising medicine to know anything of the history of their science. He told of an exhibition which he and another physician had placed on view at a certain meeting of physicians. It illustrated the history of medicine. He called it the Vesalian exhibit, after the great figure in the history of anatomy. The exhibit was surrounded by displays of baby food and the products of various concerns dealing in such commodities. Dr. Cushing halted before it during an interval between meetings and asked the man in charge if the exhibit had aroused much interest. "Yes," the man replied, "several persons have asked me for samples." It was thought that the exhibit was designed to show the virtues of some form of vaseline!

Dr. Cushing said that years ago, when Sir William Osler left the Johns Hopkins, some of the younger members of the faculty who were moved by strong convictions as to the tendencies in medicine which were then apparent conceived a plan to create a "super-professorship of medicine." One of the elements which made for its failure was the fact that Dr. Welch, whom they wished to see occupy the chair if it were created, would have nothing to do with it.

Dr. Cushing's address was scholarly, eloquent, and highly appropriate, expressing his hope that medicine would assemble all her foster-children about her in that building for the formation of scholarly habits and the stimulation of human qualities.

In the afternoon a bas-relief, designed by Mr. Paul Manship, was unveiled in the Harriet Lane Home of the Johns Hopkins Hospital, to the memory of Dr. John Howland, a former professor of paediatrics.

The second day saw the inauguration of the Department of the History of Medicine, Prof. W. H. Welch presiding. Dr. Welch spoke feelingly of what he felt was the culmination of his life's work and of his hopes for the future of the new Institute. He then introduced Mr. Abraham Flexner, the Secretary of the General Education Board, who in an excellent and thought-provoking address suggested that perhaps the American university was becoming more technical than scholarly. It was mistaking "ripples for waves" and losing some of its sense of the historical and

greater values. These symptoms were "serious and disquieting."

Prof. Karl Sudhoff, who had come to the United States for the first time, at the invitation of John Hopkins University, gave the principal address (in German). After felicitating the University as a prime mover in the study of the history of medicine, Professor Sudhoff went on to say that an important phase of medico-historical investigation was its unifying function with reference to the basic disciplines and the many specialties of scientific medicine. The physician could not stand alone, but must be in relation to the culture of his time, i.e., with the total development of humanity of to-day. Without historic perception the physician lapses into the mechanic, and thus justifies the dictum of Letamendi; "A physician who knows only medicine does not know even medicine." Medical history, snubbed and rejected in the past, has laboured diligently to perfect herself and has now come into her own. He concluded with an aphorism of Virchow's: "All scientific endeavour, even in medicine, has only a historic significance."

In the afternoon the Harvey Tercentenary Film was shown.

On the third and last day Prof. Otto Warburg, of Berlin-Dahlem, Germany, gave the Herter Lecture on "The enzyme problem and biological oxidations." He made an abstruse subject very clear, and his lecture, embodying as it did his own investigations into certain processes of metabolism, was a model of what a Herter Lecture was intended to be.

A. G. NICHOLLS

Prof. Karl Sudhoff

Dr. Karl Sudhoff, who formerly occupied the Chair of Medical History in the University of Leipzig, has been visiting the United States for the first time. He came out, on the invitation of the Johns Hopkins University, Baltimore, primarily to give an address at the inauguration of the new Department of Medical History, of which Prof. W. H. Welch is the head. While in the United States Professor Sudhoff lectured also at Harvard and Yale Universities, and at the Rockefeller Institute, New York.

Dr. Sudhoff was a medical practitioner in Germany for more than thirty years; a Prussian Sanitary Councillor for four years; and the first president of the German Society of the History of Medicine. He was the creator of what is the finest institute for the study of the history of medicine in the world, and is himself world-famous for his researches into some of the obscure corners of medical history. He is known for his translations of Arabian and ancient Hebrew texts, and of Egyptian hieroglyphics, and has written extensively on medical subjects.

Leprosy in New York

The Health Commissioner of New York has disclosed that there are twenty-one lepers at large in the city, under the supervision of the Health Department. According to the *New York Times*, those with open sores are isolated, and the others have to report regularly and are forbidden to handle food. There never has been a case of leprosy in New York in which it could be shown that a person has been infected by contact with a leper in the city. None of the patients referred to are natives of New York.

Honour to Prof. J. J. Abel

The Gold Medal of the Society of Apothecaries of London has been awarded to Dr. John J. Abel, Professor of Pharmacology in the Johns Hopkins University Medical School, Baltimore, for his distinguished services in the field of therapeutics.

Honour to Prof. Harvey Cushing

Dr. Harvey Cushing, Professor of Surgery at Harvard University, has been awarded the Lister Medal by the Royal College of Surgeons.

The Alvarenga Prize of the College of Physicians of Philadelphia

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about three hundred dollars, will be made on July 14, 1930, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

An essay intended for competition may be upon any subject in medicine, but must be accompanied by a written assurance from the author that it has not appeared previously in print, either in whole or in part, in any form, and has not been presented elsewhere in competition for a prize. The essay should represent an addition to the knowledge and under-

standing of the subject based either upon original or literary research. It must be typewritten, and in English acceptable for publication without necessity for editing by the committee. Any illustrations should be appropriate and correctly annotated with the text. Essays must be received by the Secretary of the College on or before May 1, 1930.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; and that it may be published by the author with the consent of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1929 has been awarded to Dr. George M. Dorrance, Philadelphia, Pa., for his essay entitled "Congenital insufficiency of the palate." John H. Girvin, Secretary, 19 South 22D Street, Philadelphia, Pa., U.S.A.

GENERAL

Medical Students in Canada

It is learned that there were 2,757 students registered in the nine medical schools of Canada for the session of 1928-29. Of these, 1,197 attended at Ontario and 995 at Quebec schools. Enrolments in the French schools numbered 532. The graduates totalled 407. The teaching strength of the several schools was 1,017.

Fifth International Congress of Physiotherapy, Liege, 4th to 8th of September, 1930.

The organization of this congress is progressing rapidly and we would draw the attention of physicians to the real union which will take place in Liege on the occasion of the International Exposition and the Centenary of Independence.

The Congress of Physiotherapy, presided over by Prof. Gunzburg and Prof. De Munter, has already received recognition by twenty foreign committees, among which the French section will be under the presidency of Prof. E. Gley of the Academy; the Dutch section under the presidency of Prof. Van Breeman, Secretary of the International League for Rheumatism; the Swiss section under the presidency of Prof. Rosselet of the University of Lausanne, Secretary of the International Committee on Light; the Spanish section under the presidency of Du Doyen Recasens of the Faculty of Medicine of Madrid; the section of the Grand Duchy of Luxembourg under the presidency of Dr. Schmollet Weyler; the section of Poland under the presidency of Dr. E. Faber; the Portuguese section under that of Dr. Pires de Lima de Porto; the section of the United States of America under the presidency of Dr. William Benham Snow, Editor of *Physical Therapeutics* in New York; the Brazilian section under the presidency of Dr. J. Barrozo; that of England under the presidency of Dr. Kerr Russell; the Austrian section under Prof. Strasser of Vienna; German, under Prof. Grober of Jena; Hungarian, under Professor von Dalmady; the French Colonies in Africa under Dr. Augebaud d'Oran.

The important questions to be discussed are: (a) Rheumatism and physiotherapy treatment; papers by Profs. Gunzburg for Belgium, Van Breeman for Holland, Wierzejewsky for Poland; (b) Affections of the Central Nervous System and Physiotherapy, Paper by Dr. Delherm for France.

Sections on Kinesitherapy, Electrology, Hydrology, Radiology and Actinotherapy will treat of special questions, for which about thirty authors were solicited on the 15th of September, 1929. Sections will be organized according to the number who attend the Congress at Liege: International Committee on Rheumatism; International Committee on Light; Curie Institute in Paris; Institute of Actinology in Paris; American Physical Therapy Association; American Roentgen Ray Society; Radiological Society of North America; Physiotherapeutic Sections of Paris, Belgium, Antwerp; Societies of Radiology of France, Poland, Belgium; French Society of Electrotherapy; French Federation of Medical States for Physical Education and Sports; Society of Hydrology of Belgium.

Acceptances may be sent from now on to Dr. Dubois-Trepagne, Secretary-General, 25 Louvrex Street, Liege, Belgium, with the dues of 150 Belgium francs. This will facilitate the organization of a Congress which will be noteworthy among the sessions of 1930.

The Nobel Prize for Medicine

The Nobel prize for medicine this year will be divided between Prof. Christian Eijkman of Utrecht, Holland, and Sir Frederic Gowland Hopkins, Professor of Biochemistry at Cambridge University, for their discoveries connected with vitamins.

Dr. Eijkman's work was the discovery of the anti-neurotic vitamin, while Sir Frederic's researches have been on the accessory vitamins of growth.

Sir Frederic Hopkins has been Professor of Biochemistry at Cambridge since 1914, and he has become widely known through his researches on the nature of vitamin A. He is now one of the chief authorities on vitamins and the physiology of food. Until recently he was one of the official analysts to the Home Office and he is an original member of the Medical Research Council.

A New Clinic for the Study of Metabolic Disorders

Prof. Karl Noorden, who from 1906 to 1913 conducted the first medical clinic of Vienna University, has consented to take over a model department in the municipal hospital devoted solely to the study and treatment of metabolic disorders. He will have 50 beds and a staff of selected specialists at his disposal, and will advise the authorities of Vienna on dietetic

problems. His clinic will have a special kitchen where physicians, nurses, and cooks will get suitable instruction. It should be stated that Noorden's return to Vienna, which he left some years ago for personal reasons, is not due to his appointment to a university chair; his age, which is 70, would prevent such a call. The Municipal Board of Health, however, has thought it a considerable gain to have the co-operation of so important an authority, whilst Noorden, on his side, gets an unlimited opportunity for further research, his position being quite exceptional. He will take up his work here early next year, and it is expected that his "school" for specialists will be a centre of attraction

to medical men and patients from all parts of the world.

Prof. I. P. Pavlov

On September 27th the eightieth birthday of the veteran physiologist, Prof. Ivan Pavlov, the Soviet Government, in honour of his work, assigned 100,000 roubles (about \$49,000) for the re-equipment of his laboratory in Leningrad. In thus recognizing Prof. Pavlov's important services to medical science, the Government has done the unexpected thing, viewing the matter in the light of past history.

Book Reviews

Surgical Diseases of the Thyroid Gland. E. M. Eberts, M.D., with the assistance of R. R. Fitzgerald, M.D., and Philip G. Silver, M.D. 48 engravings. Price \$3.50. Lea and Febiger, Philadelphia, 1929.

The appearance of this new book will give to all who are interested in Canadian surgery a real thrill of pleasure. Not only is it the first book of its kind to come from the pen of a Canadian author but it is one of which Canadians may well be proud.

Like all books written on unsolved, or partly solved, problems, this book leaves us wishing that the author had been able to uncover all the secrets of the disease and remove them from the realm of speculation. Having no convincing experimental proofs to offer, however, he has had the tact to spare us the tedium of reading unsupported theory. Where the views of others are essential he reviews them critically and impartially, and always in such a way as to stimulate interest.

It is as a practical guide to the management of thyroid disease that this book stands out. The clinical chapters are literally mines of information which will be of the greatest value to those of small experience. I know of no book in which the problems which surround the treatment of Graves' disease and toxic adenoma of the thyroid are so helpfully discussed and none which leaves the reader with a stronger impression of contact with a wise consultant.

Quite aside from the high quality of the material contained in it, the author and the publishers are to be congratulated on the excellence of the book as a product of the printer's and engraver's art.

The book, in fact, stands in the first class, and is strongly recommended to all who are interested in the treatment of the diseases of the thyroid gland.

W. E. GALLIE

Clinical Laboratory Methods. Russell Landram Haden, M.A., M.D., Professor of Experimental Medicine, University of Kansas School of Medicine. Third edition. 317 pp. 69 illustrations and 4 colour plates. Price \$5.00. C. V. Mosby Co., St. Louis; McAllinsh & Co., Toronto, 1929.

This work on clinical laboratory methods is one of the best we have seen. It is of reasonable size and covers the whole gamut of the subject so far as the ordinary needs of a large general hospital are concerned. The way in which the various topics are handled is worthy of praise. Before the steps of each major test are detailed the rationale of the process is given in a few words, thus conducing to a better understanding of the various processes. The laboratory worker, therefore, is less likely to deteriorate into a mere rule-of-thumb man. Usually, only one test under each heading is given, being the one that the author himself has found to be the most trustworthy.

Especially helpful are the many tables that are interspersed in the text. Among these may be mentioned Table I, which gives the identification of the reducing substances that may be found in urine; Table II, showing the normal figures for the content of urine in regard to its various chemical constituents; Table III, giving the percentage of glucose in urine corresponding to the reduction of 25 c.c. of Benedict's solution; Table XVII, dealing with the appearance of malarial parasites in stained blood films; and numerous Tables covering the chemical substances examined for in the blood.

Besides qualitative and quantitative tests applicable to the blood, and the various secretions and excretions, information is given about the preparation of many standard stains, test solutions, volumetric solutions, bacteriological technique, histological methods, and the use of the different apparatus. Tables of equivalent weights and measures and atomic weights are appended.

This book is full of little touches that reveal the practised worker in the author, which are just the things that make all the difference between success and failure in laboratory practice. A few points may be referred in the way of criticism. We would like to know the author's opinion about Gram's staining method. All laboratory workers know that it is tricky and often leaves one in doubt. In connection with the staining solution we are of the opinion that methyl violet is better than gentian violet. It is cleaner. Then, under the examination of urine for tubercle bacilli, it is stated that where there is much pus distilled water should be added to the sediment. We think tap water would be safer than distilled, for acid fast bacilli have been frequently found in distilled water as commonly found in laboratories. We question the value of guinea-pig inoculation for the discovery of the tubercle bacillus so far as this test is applied to urine. The smegma bacillus also is capable of producing anatomical tubercles in this susceptible animal. There could be some rearrangement of the Tables with advantage. Table XVII and its continuation could have been advanced two pages, so as to come under the section dealing with the examination of the blood for malarial organisms where it properly belongs. Figure 23, too, is quite in the wrong place.

In spite of such small defects, the laboratory worker will find that Professor Haden's book will seldom fail him. It is worthy of great commendation.

A. G. NICHOLLS

Recent Advances in Neurology. W. Russell Brain, M.A., D.M., M.R.C.P., and E. B. Strauss, B.A., B.M., B.Ch., M.R.C.P. 412 pages, 38 illustrations. Price \$3.75. The Macmillan Co. of Canada, Toronto, 1929.

The authors of this volume are to be congratulated on the wealth of material which they have presented

OSTOGEN *Solution Vitamin D Irradiated Ergosterol*

*in 3.5 c.c. vials and 15 c.c. bottles with
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To Hasten Healing of Fractures 4 drops daily

For Tonic Effects

Depending on the severity of the debility	2 to 6 drops daily
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Write for Literature

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concisely and clearly in such a small space. The chapters on neuro-physiological advances have been written with a view to the application of the results to clinical work. The localization of intracranial and intrathecal tumours by ventriculography, encephalography, and lipiodol injection has removed to a great extent the uncertainty which surrounded the accurate diagnosis of these conditions. These newer mechanical methods are well presented. The chapters devoted to the discussion of the diseases of the extrapyramidal system, and the cerebellar complex are very helpful in correlating the more recent work on neuro-anatomy and physiology with the results of clinical experience. Advances in the treatment of epilepsy, cerebral tumours, and other conditions are summarised ably and references given. The chapters on epidemic encephalitis and the neurotropic viruses contain a full account of the recent work and methods of treatment. Sleep—normal and pathological—conditioned reflexes, the pituitary and the hypothalamus, and sensation are the subjects of well-written chapters. These sections are extremely interesting to the clinician who wishes to keep in touch with work which before long will alter, if not transform, our ideas of the working of the nervous system.

J. BEATTIE

Diseases of the Nervous System. Smith Ely Jelliffe, M.D., Ph.D., and William A. White, M.D. 1174 pages, 476 illustrations. 5th edition. Price \$9.50. Lea & Febiger, Philadelphia, 1929.

The tremendous increase in our knowledge of neurophysiology and neuropathology within the past ten years has made the writing of a clinical neurological text-book a formidable task. The way in which the authors have welded together the anatomical, physiological, and pathological advances with the clinical material is worthy of congratulation. Recent work on the vegetative nervous system has been included in an extremely able manner. Research on this part of the nervous system is full of promise and there seems little doubt that the solution of many problems of the metabolic and endocrine disorders will be rendered easy when fuller light is thrown on the exact relation of the vegetative nervous system to the ductless glands.

The use of many of Dejerine's diagrams of lesions of the brain stem and cord renders the reading of the text very much easier and enables a student to correlate the anatomical lesion with the symptomatology.

The latter part of the book is devoted to a description of the diseases of the "psychical or symbolic systems." Included in this part is a section on epilepsy. This chapter contains an extensive analysis of the disease from a psychical aspect, but no great use is made of this in the therapy of the condition. The work of Helmholtz, Talbot, Vollmer and others on the use of the ketogenic diet and its value in association with luminal in diminishing the number of fits does not find a place in the treatment. The whole of this part of the book expresses a personal attitude and in that way is of some value, but too much stress appears to be laid on the psycho-analytic viewpoint.

The references are numerous and extremely valuable.

J. BEATTIE

An Introduction to the Study of the Nervous System. E. E. Hewer, D.Sc. (Lond.), and G. M. Sandes, M.B., B.S. (Lond.), M.R.C.S., L.R.C.P. 104 pages, illustrated. Price 21/- net. Wm. Heinemann Ltd., London, 1929.

The correct, and indeed the only, foundation for the acquisition of a practical knowledge of organic nervous disease is the study of the anatomy and physiology of the nervous system. It is hopeless to approach the subject in any other way. The distaste of many physicians for unravelling the intricacies of

a neurological case is in many cases due to a highly unsatisfactory experience in attempting to learn neurology by memorizing long tables of symptoms and signs. In most medical schools a definite attempt is now being made to bring and keep anatomical and physiological knowledge in close relationship with clinical instruction. Such a tendency is decidedly good.

The book under notice arrives opportunely and fills a need long and keenly felt by both students and teachers. A hurried glance through it might lead to the conclusion that it was a glorified "compend" of the anatomy of the nervous system. But it is much more than that. It has been compiled by teachers familiar with the needs and their experience has enabled them to present their material in orderly graphic fashion. The text is terse, only occupying 94 pages, and there is a large number of excellent diagrams, many of them coloured in such a way as to increase their value. The concluding chapter is devoted to a very brief consideration of certain pathological conditions of brain and spinal cord, and the appendix sets forth some of the more useful methods of preparing nerve tissues for histological examination. Each chapter has a short useful list of references, and the index, an important part of a book of this nature, is satisfactory.

One would expect the book to quickly find its way into the libraries of anatomists, neurologists, and such general practitioners as have not become hopelessly conditioned against study of the diseases of the nervous system.

A. T. MATHERS

The Treatment of Rheumatoid Arthritis. A. H. Douthwaite, M.D., F.R.C.P. (Lond.). 80 pages, 2 illustrations. Price 6/- net. H. K. Lewis Co., London, 1929.

The etiology and, consequently, the rational and scientific treatment of rheumatoid arthritis must still be regarded as an unsolved problem. In part I of this brochure the author discusses in some detail the two main theories of etiology advanced at the present time, namely, focal sepsis and endocrine derangements. Focal sepsis may be a primary cause in some cases, but in others the removal of the focus leads only to a temporary amelioration of the symptoms. The general group of symptoms which precede and accompany the disease (spare build, proneness to fatigue, attacks of biliousness, urticaria, erratic sweats, flushings etc.) has led to the theory of endocrine dysfunction as a cause. The author concludes that a course midway between the two theories is at present advisable.

The treatment of the disease in its early and in its fully developed stages occupies the latter half of the book. The writer is confident that the disease may be arrested and, in a large percentage of cases, cured, if the treatment is based on a careful study of the probable etiological factors concerned. It must be remembered that the soil is often of more importance than the seed. A discussion of the treatment of deformities which occur as a result of the disease concludes the book.

The author writes clearly, and his work is recommended as an excellent and up-to-date presentation of a difficult problem.

C. J. TIDMARSH

Outline of Preventive Medicine for Medical Practitioners and Students. Prepared under the auspices of The Committee on Public Health Relations, New York Academy of Medicine. 382 pages. Price \$5.00; Paul B. Hoeber, New York, 1929.

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York Academy of Medicine. There are twenty-one chapters, and each chapter has been written by a different author, who has evidently been selected as an authority on the subject of his chapter. The chapters deal either with one disease, such as tuberculosis, or with one anatomical division of the body, like the oral cavity, or take up the preventive aspect of one specialty under such headings as The Surgical Aspect of Preventive Medicine, and Obstetrics. There are also chapters on The Periodic Health Examination; The Incidence of Disease; Laboratory Aids and Allergy; also one on Self-Medication; Illegal Practice; and Narcotic Drug Addiction. It may be said that the book accomplishes its purpose of "limiting its contribution to salient suggestions based on individual experience, with no attempt at text-book completeness." The weaknesses of the book are its numerous authors. There is a great difference in approach, scope, and manner of presentation, and there is missing that balance, continuity of thought, and note of enthusiasm of individual authorship. This is a serious lack, because, as the book does not pretend to be complete, it should, if it is to accomplish its real purpose, inspire the medical reader to go on and complete his equipment for the practice of preventive medicine. Many will disagree with the author who does not give anti-toxin intramuscularly, advises its use in repeated doses, and finds that local treatment "will usually suffice" to clear up carriers. The statement that the value of typhoid vaccine was first demonstrated on a large scale by the U.S. Army in 1915 ignores the British experience in South Africa, not to mention our Canadian experience beginning in August, 1914.

It is surprising to read that the influenza epidemic of 1918-1919 "spread from the unhygienic environment of the large armies"—a statement on epidemiology rather sweeping in view of the occurrence of other similar epidemics. It would seem preferable to have had such diseases as diphtheria, rabies, and smallpox dealt with in one chapter, rather than in two or more. In the chapter on tuberculosis the need and value of the supervision of contacts is missed. The chapter on Surgical Aspects is well done, and the section on Pre-cancerous Lesions excellent. The sections on Tetanus and Rabies would be rounded out by including the prophylactic use of tetanus antitoxin and the surgical treatment of the wound. Obstetrics is dealt with satisfactorily, and the value of pre-natal and post-partum care well brought out. The subjects of Abortion, Control of Conception, Frigidity, and other topics, are approached in a broad way by an author who sees that the disorders peculiar to women "involve agencies inside and outside of medicine." The author of the chapter on Pædiatrics advances some statements that will be questioned: the "abundant evidence" that the vaccine for whooping cough has "value as a prophylactic or, if given early, of its value in aborting the disease." That concerning mumps, chicken-pox, and German measles it is "reasonable to regard them as better over in middle childhood, than not." The author of Nervous and Mental Diseases supports Medin's contention that the school is the centre for the spread of infection of poliomyelitis, and also supports the use of throat sprays and gargles as a preventive measure. The chapter on Diseases of the Nose, Throat, and Ear is interesting, and has merit in its presentation of everyday practices such as blowing the nose, the use of sprays and nasal douches. All the writers support the Periodic Health Examination, and the opportunities for preventive measures in connection therewith are well brought out, although there is a tendency to forget that the health client becomes a patient when he requires medical treatment. There is practically no reference to personal hygiene, and, so, such important subjects as diet and exercise are not dealt with. The

book has much merit and could be profitably read by medical practitioners and students. It is particularly gratifying to see this evidence of interest in preventive medicine on the part of the New York Academy of Medicine, for which they deserve hearty commendation.

GRANT FLEMING

Minor Surgery. Frederick Christopher, F.A.C.S., Associate in Surgery at Northwestern University Medical School. 694 pages, 465 illustrations. Price \$9.00. Publishers: London and Philadelphia, W. B. Saunders. Toronto, McAlinsh & Co., 1929.

"Too often minor surgery becomes major surgery through carelessness or incompetence." This explains why a really good text-book on minor surgery will appeal to all classes of the medical and surgical fraternity. Motor and industrial accidents are now so frequent that every practitioner requires a good text-book on this branch of surgery.

The author describes the ordinary wounds, skin infections, burns and electrical injuries, with a good discussion of the many forms of treatment, and the illustrations show minor details that are never given in the larger systems. To the practitioner without special training in surgery these are especially helpful chapters. The mode of artificial respiration, so successful in electrical shock, is very well described and illustrated.

The minor injuries and infections of the hand are well covered and bear the stamp of association with the technique of Kanavel. The chapter on minor surgical technique will prove of great value to country practitioners and to those just starting practice. In fact, this volume should be in the hands of everyone on leaving college or hospital for active practice. The small details of all procedures described show careful thought for the difficulties of the beginner in surgery, especially such as have not had a hospital internship in surgery.

A unique feature of this work is a chapter of forty odd pages devoted to The Surgical Intern. This is so excellently written, and of so much value to an interne, to his hospital, and to his chiefs, that it would make a most admirable pamphlet to be given each interne on starting his hospital work. It is recommended to medical superintendents as a model for the "Instructions" given new internes in some hospitals.

The work is thoroughly suitable for medical students, internes, and those who do some surgery, although it is not of great value to a hospital operating surgeon or to the teacher of surgery. It, therefore, fulfils admirably the requirements of those who do minor surgery and it is thoroughly recommended.

CHAS. K. P. HENRY

A System of Bacteriology in Relation to Medicine. By various authors. Vol. III by W. Bulloch, P. Fildes, A. T. Glenn and others. Price 1/1 per volume; 8/8 per set. (Medical Research Council). Published by His Majesty's Stationery Office, Kingsway, London, W.C.2, 1929.

His Majesty's Stationery Office brings out many admirable publications, and it is of course no new thing for Public Health Departments of various countries to be responsible for a certain amount of publishing. But the System of Bacteriology which is now announced under the auspices of the Medical Research Council is something of a departure in State literary undertakings.

The object of this System is to give "a comprehensive but not encyclopædic survey of our present knowledge of bacteria and spirochetes, with special regard to their relation to the various fields of medical work. It will also include short reviews of those economic applications of bacteriology which have

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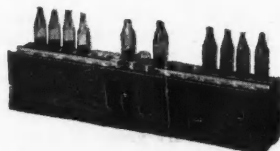
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special interest for the medical world." The plan is highly attractive, but, as is pointed out by the Earl of Balfour, Chairman of the Medical Research Committee, the magnitude of the task of such a survey makes it impossible for a single mind to deal with it. Here, however, is where the advantage of State direction is evident, for the Medical Research Council has been able to enlist nearly one hundred bacteriologists in its service, each one chosen to treat the subjects in which he has taken special interest.

It is obvious also that careful co-operation is necessary to provide against overlapping, and to judge from the plan of the System this danger has been successfully avoided. This volume (No. 3) is the first to be completed. It is devoted in part to subjects a little outside of the beaten path in medicine, but which can readily be seen to indirectly have important bearings medically, such, for example, as the application and prevention of bacterial activities in industry; baking, indigo fermentation, sugar fermentation, the decomposition of organic nitrogen compounds, etc. The Bacteriology of Water receives a chapter to itself, followed by chapters on the Bacteriology of the Dairy Industry, of Foods other than Milk-Products, and Soil Bacteria.

The Bacterial Diseases of Insects and of Plants need no very direct medical connection to enhance their interest. These are followed by chapters on B. pestis, on Organisms Associated with Gas Gangrene, on B. Tetani, and on B. Botulinus, with a concluding chapter on Bacterial Food Poisoning. Extensive bibliographies accompany each chapter.

One cannot speak too highly of the care with which this volume has been planned and executed. Whatever one may feel about State activities in medical affairs, one cannot but welcome such ventures as are represented by this text-book. It is authoritative, clearly written, and is reasonable in price.

H. E. MACDERMOT

Hospitals and the State. R. Westland Chalmers, M.B., Ch.B., D.M.R.E. 143 pages. Price \$1.75. London, John Bale, Sons & Danielsson. Toronto, Macmillan Co. of Canada, 1929.

This small book is really, as its subtitle indicates, a "Study of the Principles and Practices of Charity."

The writer begins with a comprehensive and most interesting historical survey of hospitals, tracing their development back to the day when we see the germ of the hospital idea in the private home. In the days of the early middle ages when there were no hospitals, when travel was dangerous, slow, and wearisome, it was the duty of every householder to offer hospitality to the wayfarer, as he might himself be glad of such service on some future occasion. The sick and injured received the care of the women of the household. The word "hospital" is thus directly derived from the hospitality thus dispensed.

As leprosy and the Black Death became epidemics to be reckoned with, this became burdensome and dangerous, and larger houses, where isolation could be practised, were established by the Church. Legacies left as a salve for the sins of the testator helped to support these.

The State gradually began to recognize its duty in this matter, and with the Reformation and the change in ecclesiastical control, with increasing knowledge of sanitation, and the growth of a communal conscience, as evidenced by prison reform, charity schools, and poorhouses, came the assumption by the State of the hospital. Unfortunately, as the writers shows, the State has never rightly faced and solved the problem. Voluntaryism has been accepted as a co-provider of hospitals and medical treatment, and we have as a result to-day a more or less chaotic state of affairs, grossly inadequate for the need of the

community. While the writer is speaking of Great Britain, we in Canada, would agree that the problem is not confined to that country. His claim is that there must be an extension of State assistance, a unification of hospital administration under one central authority, and a systematic and comprehensive reorganization of the whole situation. With this medical men will probably agree wholeheartedly.

J. H. MACDERMOT

Standards of Health Insurance. I. M. Rubinow, M.D., Ph.D. 322 pages. Price \$1.50. Henry Holt & Co., New York, 1916.

This small manual of 300 pages is packed full of meat. It is a book that no student of this subject should be without, summarising briefly, but in adequate detail, all the facts gathered from an intensive study of health insurance as it exists in various countries, particularly Great Britain and Germany. It is written primarily for American readers, but its conclusions will appeal to Canadians equally.

The writer considers the case for Health Insurance amply proved, and sets forth the advantages gained from its practice, inadequate and incomplete as he finds this up till now. He discusses very fully the weaknesses of the National Health Insurance Act of Great Britain, and we are glad to note that he condemns the capitation system of payment utterly. It is impossible in a brief review to give any account of this book, but it is one that will be worth any medical man's while to read carefully.

Our one regret is about the date—1916. We should like to see it brought up to date, but do not think that this would lead to any essential alterations in its contents. The years since 1916 have seen little, if any, important change in the conditions. Hence the book is by no means out of date.

J. H. MACDERMOT

The History and Traditions of the Moorfields Eye Hospital. E. Treacher Collins. 226 pages, 27 plates. Price 12/6 net. H. K. Lewis & Co., London, 1929.

A surgeon of the Royal London Ophthalmic Hospital from 1895 to 1922, Mr. Treacher Collins is known by sight, as well as by name, to thousands of doctors in all parts of the British Empire and the United States who have visited the famous hospital in the City Road.

In this book he has not only given us a readable and interesting account of the founding, growth, and life of the famous hospital through all its changes of situation and management, but has of necessity given us in broad outline the history of ophthalmology from its infancy in 1800 to its meritorious position to-day.

The names and deeds of many famous teachers pass before us in its pages, from Sir Astley Cooper at the beginning, on through Sir Jonathan Hutchinson, to men well known to most of us, such as William Lang and Lawford, Parsons and Lister. Reading it, we realize the debt we owe to those who have gone before and borne the burden and heat of the day, and into whose labour we are entered; and we are stimulated to pick up and carry on the torch of learning handed to us.

An excellent book, well illustrated, and written in a pleasant and fluent manner.

A. A. BRAMLEY-MOORE

Otosclerosis; Résumé of the Literature to July, 1928. Compiled under the direction of the Committee on Otosclerosis, American Otological Society. Vol. I and II. 684 pages. Price \$15.00. Paul B. Hoeber, Inc., New York, 1929.

This is a complete résumé of the literature on the subject, translated from all languages into English.

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The work was carried on under the supervision of Dr. Arthur B. Duell.

There are two volumes, the first covering the pathology and etiology of the disease; the second covering the symptoms, diagnosis and treatment.

In each section the subject matter is arranged in chronological order from the first publication up to 1928. Each author's published work or works are abstracted and given separately according to the date of publication. The details of the cases reported are included, and the author's generalization is given at the end.

Under pathology are described cases of stapes ankylosis from adhesions in the middle ear and from bony ankylosis in the oval window, and also cases of generalized disease of the labyrinthine capsule.

In the chapter on hereditary conditions are included a series of cases with a family history of transmitted deafness and other hereditary stigmata. Under general conditions are grouped the discussions of the peculiar ossification of the labyrinthine capsule—cartilaginous rests, etc. Under local and general conditions are grouped the effects of middle ear disease, general systemic disease and other bony diseases upon the occurrence of otosclerosis.

In the first part of the second volume, the material is arranged in a slightly different manner. In considering the general symptoms and the hearing tests, the opinions of each man are given in chronological order, but the illustrative cases are all reserved and grouped at the end, which makes for a little easier reading. In the chapter on treatment all the well known methods both surgical and non-surgical are considered up to 1928.

The editors of these volumes make no criticism. They are only responsible for the arrangement and selection of the material, but not for the opinions expressed in the chapters.

This book is a most comprehensive survey of the literature, and yet is written in such an easy style that it is accessible to any otologist who wishes to acquaint himself with all the known facts about otosclerosis. To any man interested in research on otosclerosis it is, of course, invaluable. There is probably no other subject upon which the literature of the whole world has been so comprehensively and compactly compiled into two small volumes and into one language.

W. J. McNALLY

Radium Treatment of Cancer. Stanford Cade, F.R.C.S. 158 pages, 62 illustrations. Price \$4.50. The Macmillan Co. of Canada, Toronto, 1929.

A foreword to this book stamps it with a mark of real value. This foreword is the endorsement by nine of the author's colleagues of his work and results. It seems unfortunate that the author thought this necessary. The methods of the Paris and Brussels Schools, and especially Professor Regaud's methods, form the foundation of the author's work in the use of radium. Though this is the most recent book on present day methods of using radium, it is pointed out that the use of radium is making such rapid developments that his description "may be of historical interest only before many years or even months have passed." For the last five years operations on the tongue have been given up except where foul masses of tissue had to be removed, radium taking the place of incision. This is the beginning of the new era of surgery, where the surgeon's object is to do away with surgery. The author who is a surgeon makes the following statements in his introduction. "It is no longer imperative to rely entirely on the scalpel. Radium has a wider use than that of surgery alone." "No patient however 'inoperable' should remain untreated." At Westminster Hospital "cancer of the tongue, lip and

brain are now entirely treated by radium. We feel confident that in a few years time the same will be said about cancer of the breast and uterus."

The physics of radium is described and ten pages are devoted to practical instruction in the methods used. The author states that the use of platinum needles has become the method of choice, but platinum screened radon seeds should be used for cancer of the esophagus, stomach and larynx. The surface application of radium, at 15 m. distance, is eminently suitable for treatment of cervical secondary deposits, carcinoma of the breast, mediastinal or pulmonary new growth, brain tumours and intra-abdominal neoplasms. When four or more grams of radium are available treatment is given at a distance of 10 cm. and "the method has given results which outweigh all consideration of cost." The greater value of needles compared with radon seed lies in the fact that the needles give a moderate dose for a long time, whereas the seeds give a large dose for a short time. The former method produces the best result. In the surface applications erythema is not sufficient and a greater dose is compatible with safety. An acute radiodermatitis should be produced, with a raw surface which heals in two to four weeks. The whole process is painless. In the malignant cells mitosis ceases after irradiation and reappears after a few days in abnormal form, which ceases about the sixth day, and the cell dies. Changes take place in the stroma which produces fibrosis and imprison the malignant cells. Oedema is a bad reaction and may be due to deficient radiation.

Radium exercises an influence on the sugar regulating mechanism. A large dose for a short time produces systemic disturbance which can be avoided by a smaller dose for a longer time, and the beneficial action is retained.

Carcinoma of the lung has grown relatively more frequent of late; "Bomb" radium treatment of it is likely to give some result. Radium treatment in the central nervous system is still in its infancy and requires to be developed. Some good results are reported and this field is open for further investigation. Epithelioma of the skin and rodent ulcer are well and efficiently treated by radium. Lymphosarcoma is extremely sensitive to radium. Chondrosarcoma is radiosensitive, while osteosarcoma is not; sarcoma of muscle is also radiosensitive.

The book is a useful guide to a surgeon who wishes to use radium to assist him in his work, and even, at times, to supplant standard operations.

A. HOWARD PIRIE

Cerebrospinal Fluid. Abraham Levinson, B.S., M.D. 3rd Edition, 386 pages, 88 illustrations. Price \$9.00. St. Louis: C. V. Mosby Co., Toronto: McAllister & Co., 1929.

In the third edition of this book is incorporated the results of practically all the more recent investigations concerning the cerebrospinal fluid. Indeed, in reading the book, it is a difficult matter to think of anything of any degree of importance on the subject that has been omitted. The material has been rearranged, which makes it a more convenient and very valuable reference book for the physician.

Practically one-third of the volume is devoted to a study of the history, physiology, physical and chemical properties of the cerebrospinal fluid, and a brief chapter on the anatomy of the related structures. In that portion dealing with pathological specimens, special mention may be made of the chapters on Methods of Obtaining Cerebrospinal Fluid from the Living Body; Cerebrospinal Fluid in various Diseases; and Intrathecal Treatment.

The bibliography at the end of each chapter is unusually good.

D. J. MACKENZIE

